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Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Stories of the Week

"Please repeat that last statement," pencil-poised a psychiatrist.

"Nobody seems to like me," reiterated his client. "You'd better pay attention to what I say, fathead!"

Refreshing is the modest attitude of Coach Charlie Eckman (Detroit Pistons NBA basketball team). "What can I teach these guys?" he submits, in discussing his expert cagers. "How to comb their hair? They're pros and they know their business. I function primarily as a psychologist."

He worries, though. Somebody told him about tranquilizer pills.

"How about that?" effused Eckman. "All these years I've depended on Canadian Club."

Save your money. It may be valuable again sometime.

"So Jennie has returned to her husband!"

"Yes, she couldn't stand him having such a good time without her."

New Idea for World Peace

Editorial Director Phil Redeker, who doubles as a Saturday Night Card Shark and Monday Morning Quarterback (he works on Sundays) additionally is a shrewd arm-chair economist.

For years and years, while thousands of minds wandered, Phil has preached the Redeker Theory of Money Velocity. Instead of wondering (during his vocal essays) where our next blonde was coming from, probably all of us should have listened.

Now he has a new politico-economic theory. This one is designed to prevent a war of annihilation between Communist Russia and the United States. Redeker's big idea is a "beaut," and we recommend it heartily to Eisenhower, Kruschev, *et al.*

"It's the acquisitive drive of American women which has made the United States prosperous and peace-loving," declares Brother Redeker. "Our wives keep us so busy getting the wherewithal to buy things they want that we have no time or inclination to fight for military glory."

At home, he reasons, the

(Continued on Page 8, Col. 1)

Too Many Dealers Are Butting In and Butting Heads

("Conscience of the Industry" Editorial By George F. Taubeneck)

PROPHESIED Leon Henderson, erstwhile government economist: "Everybody wants to, and probably will, butt into everybody else's business." And, by the Great Horn Spoon, it's happening in our industry. Especially is this true in the dealer-distributor and wholesaler-contractor scenes.

In the present period of relentless production flow, almost any retail outlet which can stock and display a manufacturer's products may look good to the latter—at least temporarily. Pressures to push into alien fields come from every direction nowadays, and are difficult to resist, it seems.

Hence there is a rash of scrambled retailing nowadays. Many hitherto unlikely retail outlets are trying to grab a larger share of the consumer's dollar by "butting into" the home equipment picture. And not a few manufacturers are a-betting their a-butting.

Profits, for many varieties of variety stores, you see, are tighter than ever. Human sales-productivity hasn't in-

(Concluded on Page 14, Column 1)

CRMA Members See '58 Equal to '57; Cite Looser Money, Building Rise

CHICAGO—The annual Fall meeting of the Commercial Refrigerator Manufacturers Association late last month featured a series of panel discussions of problems affecting the industry's progress, together with a realistic appraisal of 1958 sales expectations, and at the conclusion, it was the consensus that next year's volume should compare very favorably with the indicated figure for 1957, which is expected to show a decline of approximately 8% from 1956.

The members were reminded that this would make 1957 the third best year in industry history. Examination of this year's profit expectations disclosed a reasonably satisfactory record compared with earlier years, although it was pointed out that margins have drifted steadily downward in that period and there seems little prospect of material improvement in the foreseeable future.

Among reasons why 1958 should conform fairly closely to this year's volume trend, the

(Concluded on Page 25, Col. 1)

Crafts-Industrial

Jurisdictional Row Flares at Meeting

ATLANTIC CITY, N. J.—A long smoldering jurisdictional feud between craft and industrial unions that has in the past and could in the future raise havoc with industrial air conditioning installations, came to a boil at the AFL-CIO building trades department convention here recently.

Led by Department President Richard Gray, many delegates were all for walking out of the AFL-CIO if their jurisdictional rights to maintenance and repair work in industrial plants were not maintained.

They contended that the industrial unions of the old CIO are trying to take this work away from them. Gray charged that the industrial unions were

(Concluded on Page 25, Col. 4)

New Armstrong Cork Unit Will Handle Contract Operations

LANCASTER, Pa.—A wholly owned subsidiary to be known as Armstrong Contracting & Supply Corp. is being formed by Armstrong Cork Co. to handle all contracting operations now carried on by its Insulation Div., Company President C. J. Backstrand recently announced.

J. W. Liddell

Armstrong will continue its Insulation Div. under General Sales Manager A. E. Pearce, to be responsible, as heretofore, for the outright sales of the company's full line of insulating materials through established distribution channels.

The Insulation Div. will con-

(Concluded on Page 4, Col. 1)

BEHIND PAGE ONE . . .

3-Year Agreement Features Journeyman Training Plan

So. Calif. RACCA-UA Push National Plan

LOS ANGELES—A carefully planned and integrated journeyman training program jointly created by the refrigeration fitters branch of Local 250 of the United Association and the Refrigeration & Air Conditioning Contractors Association of Southern California became the principal feature of a new three-year master agreement signed by the two parties.

The agreement, signed Nov. 9, became effective Dec. 1. It also contains several other provisions considered unique in union-management contracts.

The training program is part of a national plan to provide intensive training for refrigeration journeymen.

The program became possible when the United Association at its August, 1956, convention in Kansas City, Mo., recognized the refrigeration industry for bargaining purposes by empowering general officers to institute refrigeration divisions in local unions.

Local unions were also given the right to set up such refrigeration divisions.

Since that convention action

(Concluded on Page 7, Col. 1)

* * *

Meeting Stresses Full Contractor Cooperation

LOS ANGELES — Union and contractors joined at a refrigeration and air conditioning industry dinner meeting here to discuss a new labor agreement and its unusual features for journeyman training.

Invitations stated full cooperation of contractors and union membership is needed for success of the agreement. This cooperation was evident throughout the evening, said to mark the largest attendance for a joint industry gathering here.

Speakers made it clear all contractors are invited to participate in the joint training program, whether they are members of Refrigeration & Air Conditioning Contractors Association of Southern California or not.

The union contract has been carefully drawn up so nonmember contractors employing union journeymen may have their own training program if they wish to set it up and operate on the standards which will be established.

Not wishing to undertake their own program, they may join the contractor association and participate in its training program.

Union representatives and members of their executive board took active part in the discussions to establish a complete mutual understanding with contractors regarding agreement applications.

Lars Jacobson said "this is the most progressive labor contract that has ever been negotiated in this country.

"We have something to sell the consumer. You may have

(Concluded on Page 6, Col. 1)

Hotpoint Has Sales, Distribution Dept.

CHICAGO—A re-organization program, placing full responsibility for sales and distribution of Hotpoint's complete line of appliances and television in a new company department headed by John F. McDaniel, has been announced.

McDaniel formerly was general manager of the range department. His new title is general manager, sales and distribution department.

All distribution, sales, merchandising, and advertising functions are now integrated in the new sales and distribution department. This permits improved inventory control, and a unified sales approach to dis-

(Concluded on Page 4, Col. 5)

Mueller Climatrol Bows '58 Products

MILWAUKEE—New air-cooled condensing unit, A-type coils for use with winter air conditioners, gas-fired high and low-boy furnaces, and a gas-fired duct heater are products available for 1958 from Mueller Climatrol, Div. of Worthington Corp.

Type 918 waterless remote condensing unit comes in 3-ton nominal size only for installation with Climatrol coil-cabinet or air handling units, Mueller explained. The 918-3 is rated at 35,700 B.t.u.h. capacity under 95° d.b. outside temperature when used in conjunction with Climatrol low side coil packages.

Outer casing of the unit has

(Concluded on Page 13, Col. 1)

Refrigerated Truck Standards Testing Procedures To Be Discussed Dec. 13

WASHINGTON, D. C. — The Truck-Trailer Manufacturers Association, in cooperation with the U. S. Dept. of Agriculture and the National Bureau of Standards, is sponsoring a meeting of refrigeration systems manufacturers to discuss development of a standard test procedure and rating method for truck and truck-trailer refrigeration systems.

Representatives of the Air-Conditioning & Refrigeration Institute and the Truck Body & Equipment Association will also attend the meeting at the National Bureau of Standards in Washington, D. C., Dec. 13.

The TTMA is presently sponsoring a study by the USDA-NBS to develop an industry standard method for measuring heat transfer in trucks and trailers. The purpose of the forthcoming meeting is to determine the feasibility of expanding TTMA's present study to include reefer units since there is strong feeling that both methods are urgently needed and that they should be fully compatible as to test conditions, it was explained.

The tentative agenda includes: Resume of present vehicle rating program and progress to date; need for standard rating procedures for truck and trailer refrigeration units; sponsorship and cooperation between associations; consideration of specific proposals including:

Study ASRE rating procedures for adaptation to truck and trailer unit testing; requirements for different types of refrigeration systems; air volume and velocity requirements on cooling units; draft tentative testing method and determine suitability by tests of one or more systems; and, investigate applicability of testing method to various types of systems.

Bankruptcy Petition Filed by Deering Air Conditioning

CINCINNATI — Deering Air Conditioning Co. has filed a petition for bankruptcy in U. S. District Court here listing $480,477 in debts, of which only $2,700 is secured.

Aaron J. Frank, secretary-treasurer of the firm, reportedly valued the company's assets at $430,964. These included $308,381 in stock in trade, $56,388 in machinery and tools, and $64,307 in open accounts.

Two major debts are said to be notes for cash loans payable to Louis Frank & Sons of Adrian, Mich. and Julian H. Frank of Detroit. The Louis Frank firm, which owns 98% of Deering stock is owed $203,427. Julian Frank, who is chairman of the board of Deering, is owed $100,000.

The remainder of the debts are reportedly owed to 152 unsecured creditors.

Detroit RSES Will Meet on Dec. 12

DETROIT — Year-round air conditioning controls will be chief topic of discussion for Greater Detroit chapter, Refrigeration Service Engineers Society when it meets at 8 p.m. Thursday, Dec. 12, at 20424 John R.

James Lesniak, sales engineer for Minneapolis-Honeywell Regulator Co., will talk on "Cooling Controls and Heating-Cooling Combination Controls." Nonmembers are welcome.

For more information about products advertised on this page use Information Center, page 16.

WHY MOST OXYGEN TENTS ARE EQUIPPED WITH BENDIX-WESTINGHOUSE COMPRESSORS

Because human lives hang in the balance, only the *best* in compressors will do for oxygen tents.

That most oxygen tents are equipped with Bendix-Westinghouse compressors is due to two prime facts: First, these compressors are *whisper-quiet* in operation, so that they do not disturb critical patients. Second, Bendix-Westinghouse compressors give *solidly dependable performance* day after day after day, assuring constant air-conditioned comfort for the patient.

Even though priced competitively, Bendix-Westinghouse is *not* "just another compressor". Witness the demonstrated preference of these oxygen tent manufacturers to whom quietness and dependability are all-important. *They feel that Bendix-Westinghouse compressors combine quietness and dependability to a greater degree than any other compressors on the market.*

Most likely you don't make oxygen tents. But we're sure you want the unusual quietness and dependable performance of Bendix-Westinghouse compressors.

There's one easy way to prove these qualities to your own satisfaction. Give us a trial order—and let the results speak for themselves. We can make you a very attractive proposition on both price and delivery.

Bendix-Westinghouse

EVANSVILLE, IND.

A Division of Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio—Export Sales: Bendix International, 205 E. 42nd St., New York 17, N. Y.

For more information about products advertised on this page use Information Center, page 16.

Armstrong Cork Subsidiary Formed--

(Concluded from Page 1, Col. 3)

duct its present contracting operations until Jan. 1, 1958, when they will be taken over by the new subsidiary.

Approval for the new subsidiary, which will be headed by J. W. Liddell as president, was given by the board of directors at its regular meeting in Lancaster recently. Liddell is currently manager of contract operations.

Backstrand said that the new company, to be incorporated in the State of Delaware, will have its headquarters in Lancaster County. The subsidiary will draw its personnel from the Insulation Div. and general office of the parent company.

"Our contracting business was begun some 50 years ago as a means of selling corkboard insulation, but it has developed to such an extent that we feel the time has come to decentralize in order to enhance growth opportunities and strengthen the business's competitive position," Backstrand said.

The Armstrong contracting organization provides full service on insulating projects for architects, engineers, and owners, from consultation in the design and engineering stages, and assistance in specifying particular types of insulation for certain temperature ranges, through the execution of contracts for installing the insulation products, it was pointed out. More important fields of application include cold storage, air conditioning, steam generating, and industrial processing.

Officers of Armstrong Contracting & Supply Corp., in addition to Liddell, will include E. D. Ainslie, Jr. of Philadelphia and A. J. Stream of Seattle, vice presidents, and E. W. Hines, secretary-treasurer.

Among others also named to positions with the subsidiary company were C. Q. Livingston, manager of technical sales; F. L. Gardner, contract officer; J. E. Zeller, general construction superintendent; R. H. Lawrence, contract assistant; and C. J. Snader, sales correspondent.

District office managers include: J. S. Falconer, Atlanta; F. D. Rupprecht, Baltimore; J. J. Roper, Boston; A. G. Klein, Buffalo; M. F. Kottmeier, Chicago; J. H. Layman, Cincinnati; H. B. Wentz, Cleveland; E. J. Stern, Dallas; R. A. Sigel, Detroit; C. W. Fowler, Kansas City; R. B. Ross, Los Angeles; H. D. Cobb Minneapolis; A. P. Tingle, New York City; E. D. Ainslie, Jr., Philadelphia; W. J. Appel, Pittsburgh; G. B. Hetrick, Jr., St. Louis; J. S. Taylor, San Francisco; and A. J. Stream, Seattle.

All but Klein, Fowler, Ross, and Hetrick are currently managers of the same district offices in the Insulation Div.

Klein is being transferred from the Cleveland office, Ross from the Seattle office, and Hetrick from the Hartford, Conn. branch office. Fowler has served as a salesman in the Kansas City office.

Branches of these district offices will be located at Birmingham, Charlotte, Jacksonville, Nashville, Richmond, Washington, Providence, Syracuse, Milwaukee, Indianapolis, Louisville, Columbus, Houston, Tulsa, Denver, Omaha, Albany, Hartford, Harrisburg, Wilmington, Memphis, New Orleans, Portland, Spokane, Toledo, and Elizabeth, N. J.

Connor Names Canavan

DANBURY, Conn. — P. F. Canavan, Jr. has been named vice president and general manager of Connor Engineering Corp. here.

Hotpoint--

(Concluded from Page 1, Col. 5)

tributors, dealers, and consumers, McDaniel explained.

Hotpoint Appliance Sales Co., part of the new department, is a major arm of the company's distribution, with 91 distribution points, and 23 district offices throughout the country. McDaniel also has responsibility for contacts with Graybar Electric Co., and independent distributors.

In announcing the new organization, McDaniel said that Hotpoint would immediately launch the most intensive drive in the company's history to build and strengthen its dealer organization.

The objective is to establish a sound, well-balanced dealer alignment. To this end, Hotpoint will soon announce new policies outlining a far reaching plan of action embracing quality control, franchise, pricing, product service, and distribution.

First move in this direction was to assign to Graybar an area formerly served by Hasco in Shreveport, La. and 17 counties in Mississippi formerly part of Hasco, Memphis, territory.

Since McDaniel's announcement, reports have been heard that Hasco in Chicago and New York City have started selective franchising programs for next year by notifying some present dealers that they would not be offered a 1958 franchise.

Hotpoint officials, however, indicated that these were local actions and not a forerunner of national policy.

In New York City, the selective franchising reportedly took the form of separating dealers who handled both General Electric and Hotpoint lines from one or the other of these lines.

McDaniel said that Hotpoint will tell its story to dealers in a greatly expanded program of trade paper advertising. It will inform dealers where the company is headed and how it plans to get there.

Future announcements will give Hotpoint's plans for substantially increased national advertising, sales promotion, and sales training efforts.

New functions reporting to McDaniel are: L. J. DiAngelo, manager-advertising and merchandising; L. E. Ankersen, manager-special markets; C. C. Gramer, manager - distribution development and planning; W. G. McNeal, manager-product service; and, Hasco regional managers in Atlanta, New York City, and Chicago.

For more information about products advertised on this page use Information Center, page 16.

THE SWITCH IS ON!

Nationwide, installing contractors are discovering pay dirt in the Westinghouse Air Conditioning powerhouse sales plan.

Now, Westinghouse offers a potent three-pronged sales program that brings in sales profit for installing contractors. Here's what it does . . .

1. Makes people in your community want central air conditioning by telling them why they should want it.

2. Finds qualified prospects in *your* local market area.

3. Gives you proven tools to quickly convert these prospects into profitable sales.

The program is <u>working</u> <u>now</u>—even before the season. Here's what's happening . . .

Don Tilley of A. C. Tilley Company, Evansville, Indiana, switched to Westinghouse because . . . "We are specialists in this business. We need a *complete* line of top-quality equipment so that we can *engineer* the job to the house. Westinghouse makes the best . . . and they help us sell it with a sales program second to none."

Herman Myers of Radalec, Inc., Shreveport, La., will tell you . . . "We get our price with Westinghouse. That means we get our profit. People are willing to pay the difference when we sell the Westinghouse name, Westinghouse quality teamed up with our reputation for the best job in town."

J-80554

BETTER CHECK

Some areas still have openings for aggressive contractors. Call any of these *seven men of action* for details.

Jim Reynolds Pittsburgh, Pa. EXpress 1-2800	**Walt Hunken** Staunton, Va. STaunton 6-0711	**Bob Haubold** Dallas, Texas RIverside 1-5109	
Milt Bevington Atlanta, Ga. TRinity 4-1641	**Tom Mullen** Chicago, Ill. WHitehall 4-3860	**Al McDonald** St. Louis, Mo. GArfield 1-6911	**Bill Constance** Los Angeles, Calif. RAymond 3-9071

IN AIR CONDITIONING, THE <u>SWITCH</u> IS TO

Westinghouse

Westinghouse Electric Corporation • Air Conditioning Division • Staunton, Virginia

For more information about products advertised on this page use Information Center, page 16.

Discuss Labor Agreement--

(Concluded from Page 1)

trouble doing this, but not with any one who recognizes that this industry requires a super-skill."

Charles Walling, recently elected national president of RACCA, said drawing up the new contract took eight days of solid work.

"Sometimes we would take an entire day on a single point, in order to develop it properly to the satisfaction of employers and union.

"I would ask," Walling said, "if there is any point you do not understand about this agreement you stay with it until you do understand it.

"We are going to have classes for journeymen so good that even the contractor will want to go to learn more about his trade.

"I believe if we find a spot in this contract that is harmful, we can come back to the business agents and work it out with the union.

"Written into the agreement are a number of programs.

"Definitely there is an association program.

"It takes everybody in the industry to put this over. I leave you with this thought: that we help one another in working out this very difficult program," Walling concluded.

Henry B. Ely, RACCA of Southern California executive secretary, said "this is our opportunity. This agreement is legal in every respect.

"The case brought by Sheet Metal Contractors of San Francisco against Sheet Metal Workers Union of Marin county protesting union collection of joint conference board money by a local their men did not belong to, was won by the contractors in the Federal district court.

"But when appealed the case was thrown out by the Federal ninth circuit court of appeals.

"The joint conference program of the Lathing and Plastering industry may be subject to legal attack. We want to be sure our program will not be subject to attack.

"Pensions, and health and welfare, we know are permitted. All other money goes to the bank, under trust agreement.

"This training money will go to the bank and will be spent by the public representative, a high caliber man, beyond reach of either side, who handles this money.

"Equipment, teachers, the training courses, as well as ultimate certification of journeymen, are up to the committee.

"The principle is this: the journeyman must continually be trained to get the top wage in the industry.

"He must maintain it himself.

"It is an entirely new principle.

"The employer can train the journeyman entirely, but basically it is an industry program.

"We do not believe there is any possibility of this fund being misused. There can be none of the things that have concerned congressional committees.

"You will find that any journeyman can attend any meeting of the committee, and we hope he will," Ely said.

E. H. Ballard, business manager for the Refrigeration Fitters branch, U. A. Local Union 250, said "this past year has been worse, so far as the ability of the union to furnish journeymen to the industry is concerned, than any year in the past.

"We have had orders for as many as 40 to 50 journeymen that I could not fill, and that is part of the reason why this program came about.

"I believe that if the intent of this agreement is carried out, it is going to be the greatest thing that has ever happened in this country," Ballard concluded.

During question and answer period Ely clarified these points:

If a contractor not a member of the association has his own program, the trustee of his fund will pay to teachers, for classrooms and other expenses, and to the journeymen.

When the journeyman is certified, the employer will no longer pay that journeyman to go to school. The journeyman has to keep up with developments in the industry during the year following certification in order to renew certification at the end of the year.

It is our guess that 60% of the journeymen will become candidates for certification.

Walling interjected the comment that "you cannot carry on training of people one contractor at a time. It is a mass program.

"Some contractors are going to have to put some time in on this thing. Every one who signs a union agreement is going to have to help."

The question was asked, what percentage of employers signed this agreement, and what percentage of the union's members do they employ?

Ely answered: 50% of employers, employing 70% of the union's members. He pointed out the public representative provided in the agreement is there to give every employer a fair shake.

The training program is going to cost money, Ely said, and is going to be ready by Sept. 1. The thing for the contractor to do is to join the association.

Schuck said, "we figure $200,000 will be paid into this program during the year before it begins operation."

Comment about a training program of quite a few years ago brought this comment from Schuck: "As I recall the older program, one of the main problems was there was not enough money there to carry it through."

Asked how many union members voted for the agreement, Business Agent William Hardick said, Refrigeration Fitters voted by secret ballot 5 to 1 in favor of this agreement. Some of these men are not going to take this course, most of them are.

"Right now," Hardick said, "we have 10% of our member journeymen going to school.

For more information about products advertised on this page use Information Center, page 16.

Training Program--

(Concluded from Page 1)

by the U. A., its general officers have conferred with officers and directors of the national Refrigeration & Air Conditioning Contractors Association (RACCA) and are fostering a national plan for refrigeration journeyman training.

Operating much like a local union, refrigeration fitters branch here has separate offices, a business manager, and two business agents with jurisdiction over Los Angeles county and adjoining Orange county.

Contractor members of RACCA of Southern California represent the same area.

JOURNEYMEN GET HOURLY INCREASE

New Los Angeles agreement provided an hourly increase for journeymen Dec. 1.

No other changes involving costs to the contractors are effective until May 1, 1958.

The article on "training and education" opens with this section:

"The refrigeration and air conditioning industry requires the services of highly skilled journeymen. Technical advances in the industry make it essential that the journeyman continuously keep himself abreast of the industry through study and education. Without fully trained and competent journeymen neither the employer nor the union will be able to maintain the working conditions provided for in this agreement, nor adequately serve the public."

A joint journeyman and apprentice training committee composed of four union representatives and four representatives selected by the contractors' association, is established, and will take over duties of the present joint apprenticeship committee.

PUBLIC REPRESENTATIVE TO BE SELECTED

A public representative shall be selected by the committee. He shall determine costs, outlays, and overhead, administer funds for the association program, and for any individual employer's programs.

The committee has responsibility for training courses, teachers, equipment, and ultimate certification of journeymen.

Before Sept. 1, 1958, and semiyearly thereafter, a union member with two years or more as journeyman may declare himself a candidate for certification and the necessary year of training.

He will receive $4 for each three hours of class instruction during the year, but not after he is certified.

Certification is good for a year. The certified journeyman is expected to keep himself up with developments in the industry in order to get a renewal, but will not be compensated for classes he may attend.

For being a certified journeyman his compensation will be 25 cents an hour above journeyman scale.

When qualified, candidates may become certified service journeymen, or certified construction journeymen, or certified combination journeyman.

Here are other provisions, of which the first three are considered by the negotiators to be distinct innovations in union-management contracts:

"Call-back" section, providing a certified journeyman, if he performs his work in an incompetent, or wilfully neglectful manner, and the joint committee so rules, will be required to correct such work on his own time.

For the first time in history, the negotiators believe, a union has agreed to guarantee work of its members. On the other hand, if it is found the complaint is unjustified, the employer must pay an amount double the original wages for the job to the certified journeyman.

For "pirating" a journeyman from another employer at a wage rate higher than provided in the agreement, an employer and the journeyman may be fined $500 by the joint grievance board.

"Fair representation" article permits a single employer, if he thinks anything wrong, underhanded, or crooked, has been done by a business agent, or by a professional representative of the employer, to present his case before the rank and file of the union at a regular meeting, or before the rank and file of the association at a regular meeting.

This is believed an innovation in union contracts, and can be used to prevent crooked dealings of the type that have hit the headlines over the nation because of investigations by the Senate labor-management (McClellan) committee. Contractors debated this feature thoroughly with representatives of the union.

The contract provides:

Ten cents an hour for health and welfare.

For vacations a percentage of gross wages effective May 1, 1958, and an added percentage effective Nov. 1, 1958.

For education and training 15 cents an hour on all uncertified journeymen and foremen effective May 1, 1958.

For pensions 10 cents an hour effective May 1, 1959.

Inside Dope

By GEORGE F. TAUBENECK

(Continued from Page 1, Col. 1)

American husband buys Peace at any Price—and that's a typical American male's attitude toward international affairs.

When women's desires for material things are spurred by example—advertising, the neighbors—prosperity and taming of warlike men result.

Ergo: If American propaganda campaigns were concentrated on Russian women—through trade fair exhibitions of the luxuries American gals consider necessities, by parachuting millions of copies of American women's magazines behind the Iron Curtain, etc.—Russian men might be diverted from urges to conquer the world to peaceful conquest by *their* not-so-little women.

Makes sense, eh, fellow husbands?

Let's Not Be Nutsnik

We might expect the Russians to claim full credit for developing Sputnik, but why are our officials and the Press so willing to concede that they're ahead of us in ALL things scientific?

This throws "Dope." Never before have we believed the Commies about anything. Implicitly NOW, however, American citizens seem ready to agree that everything they tell us about their ICBM's, hordes of beyond-us scientists, etc. is Gospel Truth.

What gives? Why are we so jittery—and supine—all of a sudden?

Even if we accept all their claims, we should realize that it was a captured German team of rocket experts—who'd worked together *on rockets* ever since the Versailles Treaty of 1919 (which forbade Germany to build airplanes or artillery)—which *really* put Sputnik into its orbit.

When the Russians captured Peenemunde (the German rocket manufacturing center) they stripped it of equipment, kidnapped 2,000 German rocket technicians, and secretly ordered them to keep on developing rockets.

This Teuton aggregation was 30 years ahead of the rest of the world already in terms of rocketry.

Furthermore, U. S. satellite and atomic secrets were *stolen* from us by Communist spies.

Howsoever, this Russian propaganda triumph could become a turnaround Big Deal for our free-enterprise economy, *and possibly a guarantee of World Peace.*

Here's why:

(1) It has stimulated a new spate of U. S. armament expenditures (and further inflation, of course). That funny-money inflation in itself will speed business volume for everyone in our industry. So, for the foreseeable future, *business should get better and better* for each and every reader of this publication.

(2) *Our National Pride Has Been Hurt, While Russia's Ego Has Skyed.* Personally and nationally, prideful egotism invariably outweighs sensible economics. Damning the expense, for instance, Communist Russia mass-produced athletes and won the last Olympic Games. Significant?

(3) Inasmuch as National Pride embraces sporting victories (like the Olympics) we can hope that a Race to Space will become much more exciting to Kruschev and associates than annexing minor real estate in the fallow Near East, or anywhere else on this little planet.

Hence, Peace on this Earth for awhile is a better probability *now* than it has been, we figure.

Let us repeat: It's pride and prestige and propaganda values which motivate the Russians. Why should they fool around with dinky Earth conquests when the UNIVERSE beckons them?

Sober Thought

Belatedly, the American people and government seem ready to go for a frenzied damn-the-cost Missile Program. It does not seem difficult to predict results of this abandonment of fiscal sensibility.

Alexander Hamilton described it in "The Federalist":

"Safety from external danger is the most powerful director of national conduct. Even the ardent love of liberty will after a time, give way to its dictates. The violent destruction of life and property incident to war, the continual effort and alarm attendant on a state of continual danger, will compel nations the most attached to liberty to resort for repose and security to institutions which have a tendency to destroy their civil and political rights.

"To be more safe, they at length become willing to run the risk of being less free."

Out of Our Mailbag

Humphreys, Incorporated
Concord, New Hampshire

Editor:

Last Thursday I returned from a three-week trip in the British Isles and was there when Sputnik #2 was launched. I thought you might be interested in its propaganda value there:

1. Indignation was aroused that a dog would be so mis-used by the Russians.

2. Great concern for the Dog's safety.

3. So what!—the Americans will launch one soon and it will be much better.

4. Basis for the following joke (my real reason for writing this letter).

A new American cocktail has been developed. It is made of Vodka—and the juice of Sour Grapes.

Perhaps this information has already reached you. Anyway, I thought it might be something for "Inside Dope."

H. E. HUMPHREYS,
President-Treasurer

(Concluded on next page)

For more information about products advertised on this page use Information Center, page 16.

Inside Dope

By GEORGE F. TAUBENECK

(Concluded from preceding page)

Out of Our Mailbag

Allentown, Pa.

Editor:

Once again looking over your book, "You'll Love This One," I was wondering if you heard about the horse which got the Asian Flu?

Seems the flu germs were raising ned in the horse's veins, and they (the germs) were laughing and saying, "he has not felt anything yet, so here we go into the arteries."

One little germ, hearing this, said: "Here's where I put my foot down. I am not changing streams in the middle of a horse."

EDGAR W. WEAVER

Detroit Controls, Inc.
Detroit, Michigan

Editor:

Essentially your piece on automotive air conditioning is absolutely true. I would like to point out under the heading "Service—the Big Problem" that while expansion valves do constitute a certain percentage of the service troubles, they seem to be fairly small in our particular case in proportion to the amount of business.

However, it is still true that many servicemen remove a valve and then determine what is wrong with the car.

F. Y. CARTER,
Manager, Refrigeration Sales

Chrysler Corp.
Detroit, Michigan

Editor:

I present these comments on your timely article about automotive air conditioning.

1. The Chrysler factory installed system for their cars is not "considerably" more expensive, considering that the heater is built into the same unit. For after-market sales the additional unit has a definite price advantage.

2. We are still working for the units that are being transferred from car to car. What are the industry figures of actual improvement of units from old cars to new?

3. Under "factory installation," you state, "factory installed air conditioning is only a couple of years old." For a fact, we do know that Chrysler installed several thousand units in their cars in 1953 and the number of installations almost doubled in 1954. Incidentally, that unit weighed about 170 lbs. Whereas, todays unit weighs only a little over a 100 lbs.

4. Refrigerating capacity is the problem involved in cooling a car when the owner expects it to cool down very quickly from the time he enters the car. Although we are using a compressor displacement equivalent to the compressor capacity required to cool a six-room ranch house, yet the capacity of the unit at 25 m.p.h. is not adequate to cool a six-room ranch house.

Our objective is to increase capacity at low driving speeds. In discussing solar radiation on the large glass panels, you mentioned that some interior temperatures have been in the sun with the window closed and have recorded as high as 190°.

Our experience, even in southern Arizona and the desert around Yuma, have shown 150° temperatures. Of course, these temperatures were in the shaded areas of the car where the sun had no opportunity to actually direct its ray to the thermostat. It is our recommendation to open the window for the first block of driving so that the extremely hot air that is in the car may move out.

My comments or the lack of them, should not be construed that Chrysler or myself have officially approved or endorsed the column in its entirety.

J. D. LOVELEY,
Asst. Chief Engineer,
Car Air Conditioning

Campbell-Ewald, Inc.
Detroit, Michigan

Editor:

This article should raise the sights of those of your readers who are involved in the manufacturing, selling, and servicing of automotive air conditioning units. Great job!

COLIN CAMPBELL,
Vice President

General Motors Corp.
Detroit, Michigan

Editor:

Your references regarding the reluctance of dealer mechanics to service automotive air conditioning units were of particular interest to us. We realize there are many dealer service departments that have not set themselves up to service automotive air conditioning and the important reason for this is because of the low sales volume of air conditioning units particularly in the Northern section of the country. On the other hand we know of many dealers shops who are doing an adequate and satisfactory job of air conditioning installation and servicing.

General Motors divisions conducted a very comprehensive air conditioning training program for dealers mechanics as well as factory field personnel at the time these units were introduced on the market.

We have also encouraged dealers to equip themselves with the air conditioning tools that are necessary for the proper servicing of this unit. We felt that your article might well point up the fact that manufacturers have done their best to offer dealers the necessary training for the servicing of this unit. Service manuals have been prepared covering air conditioning service.

The tremendous growth of this business which you refer to in the article has been enough to make our executives recognize that air conditioning is here to stay and that future volume on this unit will show steady increases.

EDMUND RUFFIN

The Economics of Air Conditioning

What It Costs To Own and Operate Year-Round Systems In Apartment Buildings, Hotels, Motels, and Homes

By John E. Haines, Vice President, Minneapolis-Honeywell Regulator Co.

The "Economics of Air Conditioning" means simply how much additional it is going to cost the owner of some kind of a building to own an operate an air conditioning system.

This material was presented by Mr. Haines, who is a past president of the ASHAE, before the Conference on Designing the Indoor Climate, held at the University of California at Los Angeles earlier this Fall. First part of the article, covering the economics of air conditioning commercial and industrial buildings, was published Nov. 18.

This second part covers the subject as it pertains to buildings that are temporary or permanent homes for people (hotels, apartment buildings, single residences).

A different way to analyze air conditioning and its effect on the economics of business operation is the one we have used in studying the operation of apartment buildings. All of our figures thus far have shown the cost of a complete year-round air conditioning system. Many people think that they are doing the buyer a favor when they help him cut the first cost by compromising with quality and cutting out basic features.

This is illustrated in an analysis of the apartment house market where the buyer can either buy a good system for an initial cost of $5.58 per sq. ft. or he can cut the heart out of the system and end up with a cost of $4.48 per sq. ft.

New Apartment Building

In a typical new apartment building, the cost to own and operate the building, including the heating, equipment, supplies, and the payroll, is $2.32 annually per sq. ft. The additional cost of owning and operating a complete and flexible air conditioning system, which is operating 24 hours per day seven days per week, would be 79 cents annually per sq. ft.

If a less than complete system is installed at a saving of 20% in the first cost, the annual owning and operating cost would be 70 cents per sq. ft. The annual income per square foot averages $2.78, including a 20% profit, without air conditioning.

If a complete system of air conditioning is installed, the annual rent per square foot would have to be increased 95 cents in order to provide a 20% profit on the investment.

If a less than complete air conditioning system is installed, the annual rent per square foot would have to be increased 84 cents in order to provide a 20% profit on the investment.

Men and women who work in air conditioned office spaces and shop in air conditioned stores are becoming dissatisfied with non-air conditioned apartments. They are willing to pay more for the comfort and cleanliness which a complete year-round air conditioning system will provide.

Existing Apartment Building

In a typical existing apartment building, the cost to own and operate the building, including heating, equipment, supplies, and the payroll is $1.69 annually per sq. ft. Additional cost of owning and operating a complete air conditioning system operating 24 hours per day, seven days per week, would be 90 cents annually per sq. ft.

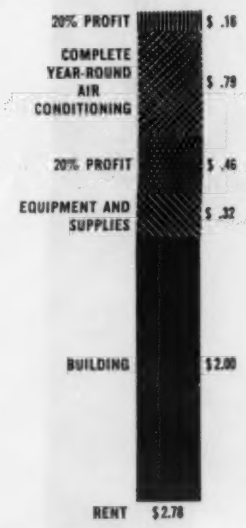
If a less than complete system is installed at a first cost saving of 20%, the annual owning and operating cost would be 79 cents. The annual income per square foot averages $2.03, including a 20% profit, without air conditioning.

When you analyze this from an owning and operating standpoint, it turns out that the

(Continued on next page)

NEW APARTMENT BUILDINGS

Typical Owning and Operating Costs Per Sq. Ft. Per Year



(Per Sq. Ft. Per Year Without Air Conditioning)

$.95 added rent is required to pay for complete year-round air conditioning.

(Per Sq. Ft. Per Year Without Air Conditioning)

$.84 added rent is required to pay for incomplete year-round air conditioning.

Conversion Formula

Costs Per Apartment Per Month = Costs Per Sq. Ft. Per Year x Area In Sq. Ft.

12

For more information about products advertised on this page use Information Center, page 16.

Air Conditioning Economics--

(Continued from preceding page)
apartment owner needs to ask 95 cents per sq. ft. extra rent for the cheaper system and only $1.08 for the best system. This means that the tenant of a typical 400-sq. ft. apartment must pay $52 per year, or $4.33 a month, extra to have the system that gives him the benefits of complete year-round air conditioning.

It becomes apparent that increases in efficiency over those required can result in substantial returns on the investment in complete air conditioning. Since it takes so little to make the investment in a quality system pay, why cut quality?

New Hotels, Motels

In a typical new hotel or motor hotel, the cost to own and operate the guest room area, including heating, is $3.47 annually per sq. ft. Equipment and supplies amount to $1.90 and the payroll $3.42. The additional cost of owning and operating a complete and flexible air conditioning system, which is operating 24 hours per day, seven days per week, would be 85 cents annually per sq. ft.

Operating Costs

If a less than complete system is installed at a saving of 20% in the first cost, the annual owning and operating cost would be 75 cents per sq. ft.

The annual income per square foot from the guest room area averages $10.55 including a 20% profit, without any air conditioning.

If a complete air conditioning system is installed, the annual rent per square foot would have to be increased $1.02 in order to provide a 20% profit of the investment. If a less than complete air conditioning system is installed, the annual rent per square foot would have to be increased 90 cents in order to provide a 20% profit on the investment.

'More Guests Insist On Air Conditioning'

Each year, a greater percentage of hotel and motor hotel guests insist on air conditioned rooms and are willing to pay for it.

It is obvious that an extra charge should not be made except during the summer months if cooling only is provided for the guest rooms. Year-round air conditioning provides for an increase in income during the entire year plus reduced cleaning and redecorating costs. Therefore, it pays for itself more quickly.

Existing Hotels, Motels

In a typical existing hotel, the cost to own and operate the guest room area is $2.77. Equipment and supplies amount to $1.90 and the payroll $3.42 per sq. ft. The additional cost of owning and operating a complete air conditioning system which is operating 24 hours per day, seven days per week, would be 95 cents annually per sq. ft.

If a less than complete system is installed at a saving of 20% in the first cost, the annual owning and operating cost would be 83 cents per sq. ft. The annual income per square foot from the guest room area averages $9.71, including a 20% profit, without air conditioning.

If a complete air conditioning system is installed, the annual rent per square foot would have to be increased $1.14 in order to provide a 25% profit on the investment. If a less than complete air conditioning system is installed, the annual rent per square foot would have to be increased $1 in order to provide a 20% profit on the investment.

New Homes

Up to this point, our material has been concerned with non-residential buildings—and we have tried to relate the costs of owning and operating a complete year-round air conditioning system to the particular costs of doing business in commercial and industrial buildings.

I know that many of you are primarily interested in homes, and probably most of you are homeowners.

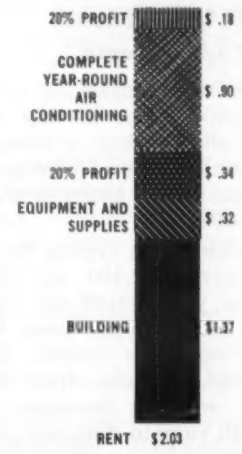
We've added insurance and taxes calculated at 2% of the value of the home which equals 27 cents per sq. ft. per year. Then we've computed the cost of typical utilities such as heating, light, and telephone as 29 cents per square foot per year. A typical cost for maintenance and repairs is also 29 cents per square foot per year.

Now, if we calculate the cost of owning and operating a complete year-round air conditioning system—and assume its life to be 20 years—we come up with a cost of 17 cents per sq. ft. per year. This shows it costs 10½% extra to own and operate a complete system of air conditioning in a $15,000 home. Or, $15.60 per month extra will pay

(Concluded on next page)

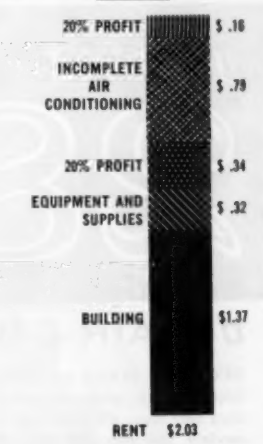
EXISTING APARTMENT BUILDINGS

Typical Owning and Operating Costs Per Sq. Ft. Per Year



(Per Sq. Ft. Per Year Without Air Conditioning)

$1.08 added rent is required to pay for complete year-round air conditioning.



(Per Sq. Ft. Per Year Without Air Conditioning)

$.95 added rent is required to pay for incomplete air conditioning.

Conversion Formula

Costs Per Apartment Per Month = Cost Per Sq. Ft. Per Year x Area In Sq. Ft.

12

Air Conditioning Economics--

(Concluded from preceding page)

for owning and operating a complete air conditioning system.

Costs $21.30 a Month In $25,000 Home

A similar analysis of a typical $25,000 home having 1,500 sq. ft. shows that a complete year-round air conditioning system costs 8½% extra or $21.30 per month.

If we look at a typical $45,000 home having 2,400 sq. ft., a complete year-round air conditioning system costs only 7.6% or $34 more per month. It is, of course, obvious that these typical square footages and costs will vary in different areas.

Buildings are built to keep out the elements and to create an enviroment for living, for working, and for industrial processes.

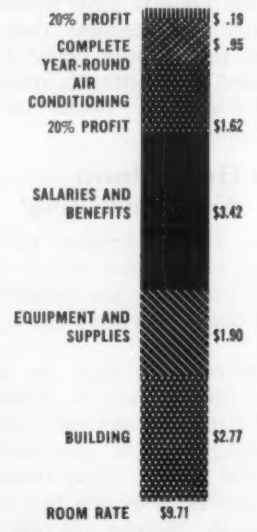
Without the building, an environment cannot be created. Without the proper environment, there is no purpose in constructing the building.

Every day, the creation of a suitable and adequate environment becomes more important to the comfort, health, and productivity of people and to industrial processes.

Editor's Note: This concludes the two-part article on the "Economics of Air Conditioning" by John E. Haines, vice president of Minneapolis-Honeywell Regulator Co. The first instalment appeared in the Nov. 18 issue. Reprints of this article will be made available if enough requests are received. When making inquiry please state whether you are interested in the first or second section or both.

EXISTING HOTELS AND MOTELS

Typical Owning and Operating Costs Per Sq. Ft. Per Year



(Per Sq. Ft. Per Year Without Air Conditioning)

$1.14 added room rate is required to pay for complete year-round air conditioning.

(Per Sq. Ft. Per Year Without Air Conditioning)

$1.00 added room rate is required to pay for incomplete air conditioning.

Conversion Formula

Costs Per Guest Room Per Day = $\frac{\text{Costs Per Sq. Ft. Per Year} \times \text{Area In Sq. Ft.}}{365}$

NEW HOTELS AND MOTOR HOTELS

Typical Owning and Operating Costs Per Sq. Ft. Per Year

(Per Sq. Ft. Per Year Without Air Conditioning)

$1.02 added room rate is required to pay for complete year-round air conditioning.

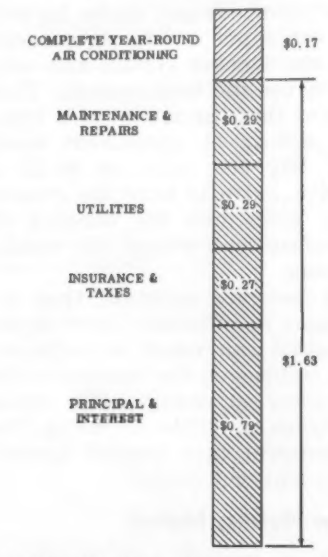
$.90 added room rate is required to pay for incomplete air conditioning.

Conversion Formula

Costs Per Guest Room Per Day = $\frac{\text{Costs Per Sq. Ft. Per Year} \times \text{Area In Sq. Ft.}}{365}$

TYPICAL $15,000 NEW HOME

Owning and Operating Costs Per Sq. Ft. Per Year



Only 10½% (0.17 ÷ 1.63) or only $15.60 more per month (owning and operating) to enjoy benefits of complete year-round air conditioning.

TYPICAL $25,000 NEW HOME

Owning and Operating Costs Per Sq. Ft. Per Year

Only 8½% (0.17 ÷ 2.00 or only $21.30 more per month (owning and operating) to enjoy benefits of complete year-round air conditioning.

TYPICAL $45,000 NEW HOME

Owning and Operating Costs Per Sq. Ft. Per Year

Only 7.6% (0.17 ÷ 2.24) more or only $34 more per month (owning and operating) to enjoy benefits of complete year-round air conditioning.

For more information about products advertised on this page use Information Center, page 16.

Mueller's '58 Product Offerings--

(Concluded from Page 1)

been designed for outdoor installation, has smooth rounded-corner free-flow design. Front and back access doors provide accessibility and all external electrical connections are made at a junction box. Raised base is designed to drain off any water getting into the unit. Louvered sides provide increased air flow, the company said, with the bottom seven rows tilted in and down for positive air distribution over the two condenser coils.

Has All Needed Internal Wiring, Controls

The unit is shipped complete with all necessary internal wiring and controls, including a furnace fan relay. Standard safety controls include high-low pressure cutouts, overload protection for fan and compressor motors, and a relief device on refrigerant receiver. Combination drier and liquid line sight glass and moisture indicator is also available as standard equipment.

Types 919 and 921 coil-cabinet units are A-type coils designed for use with low and high-boy winter air conditioners, the firm indicated. Having low-pressure drop, units are suitable for use with a large number of furnaces, it was stated. Both are available in 2, 3, and 5-ton sizes. Several alternative casings are provided for each size. Featured are a fully hermetic pre-mounted expansion valve and an improved method of condensate collection, Mueller said.

Offers Highboy Winter Units

Gas-fired sectional high-boy winter air conditioners, types 130-131, range in capacity from 80,000 to 220,000 B.t.u. input. Both are shipped fully assembled with burners and controls in place and pre-wired. Type 130 features a direct-drive blower while type 131 utilizes belt-driven blower.

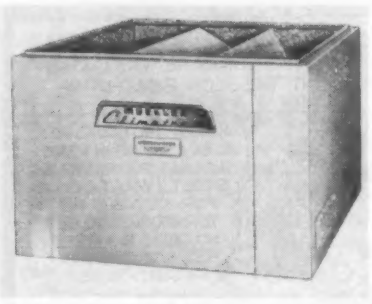
Units incorporate a die-formed heating element with continuously welded airtight joints, it was explained. All models are approved for closet installation with zero clearance from sides and back and 6-in. clearance from top, front, and vent.

Low-boy gas-fired winter air conditioners range in capacity from 80,000 to 185,000 B.t.u. inputs. Of sectional heat exchanger design, types 136 and 137 utilize a common combustion chamber, it was pointed out. Several models are designed specifically with the addition of summer air conditioning in mind.

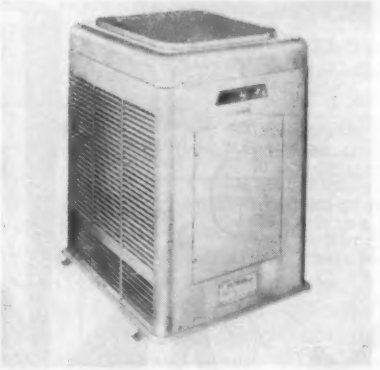
Have Oversize Blower Motors

Units feature oversize blower motors and an open-type casing construction which, it is claimed, results in higher c.f.m. delivery. Addition of both types rounds-out the line of sectional gas-fired furnaces, Mueller said.

Compact, types 136 and 137 require less floor space, permit rear entrance to the cabinet and thus easier access to filters and blower-motor combination, are shipped completely assembled with burners and controls in place and fully pre-wired, according to the company.



TYPE 919 and 921 coil-cabinet units are A-type coils designed for use with lowboy and highboy type winter air conditioners. They are available from Mueller Climatrol in 2, 3, and 5-ton sizes.



REMOTE air-cooled type 918 condensing unit comes in 3-ton nominal size only for installation with Mueller Climatrol coil-cabinet or air handling units.

Type 162 gas-fired duct heater is available in four sizes ranging from 80,000 to 140,000 B.t.u. inputs. Light and compact, it is engineered for use with a remote air source, can be used in combination with Climatrol blower filter and cooling units to provide year-round air conditioning system, it was stated.

With type 162, adequate heating can be provided without oversize unit to achieve sufficient blower capacity, the company said. In areas where long duct runs are necessary and central heating units cannot provide sufficient heat, type 162 units can be installed in the long runs to provide supplementary heating desired, it was added.

Unit's compactness enables it to be suspended in low headroom areas. It is shipped prewired, completely assembled with burners and controls in place, and joints continuously welded and airtight. Unit is of sectional heat exchanger design with the heating element of die-formed steel and ceramic coating, Mueller stated.

They'll Do It Every Time

by Jimmy Hatlo

Too Many Dealers Are Butting In and Butting Heads

(Concluded from Page 1)

creased nearly enough to compensate for their higher operating costs—so all kinds of retailers are looking around for new products to sell. They'll try anything once, apparently.

And always there are field salesmen for home equipment (such as air conditioners, refrigerators, freezers) who are willing to accommodate them. Pressure by some manufacturers' sales managers may account for field salesmen's eagerness to add temporary volume in this manner—no matter what the long-range disruption cost.

Department stores, which average a 36% profit margin, are eyed enviously by hole-in-the-wall merchants who operate on half that figure or even less. When the latter succumb to the temptation to compete with the former, said invaders "from outer space" spur the big stores to mimic the latter's low-end pricing practices.

Thereupon the earnest-and-honest specialty dealer is hit. In foolish retaliation too often he cuts his prices, too. This cycle makes it harder for everyone or anyone to show a profit in the business of selling air conditioners, refrigerators, freezers, etc.

Thus it's all too true that today's home equipment dealer, whether specialist or fringe-type, is striving to exist in an atmosphere of potential disaster. (Our long-range bet is on the specialist—but don't overlook the disaster possibilities for many of them.)

Strongest consumer push toward scrambled retailing (every retailer butting into everyone else's business) comes from the suburbanite who wants to do all of his-or-her buying in one place. Pressed-for-time consumers patronize the nearest shopping center, which usually displays everything from hot water bottles to heat pumps.

As a matter of fact, visiting the shopping center has become a social event and a matter of social custom for many newcomer suburbanites. This new "shopping center" threat to the livelihood of downtown merchants (or isolated neighborhood specialists) gives impetus to many of the latter to go berserk themselves. In short: too many of them will stock ONE of *anything* they think *anyone* who enters their store might buy.

A sad example of this mixed retailing: A west coast petroleum company sold refrigerators, freezers, and room coolers at 48 of its service stations. In the process it lost money, and had to sell its gas stations to another oil distributor—which avers it won't stay in the appliance business any longer. Reason: appliances "are completely foreign to the oil and gas business."

Gas stations, like department stores and other miscellaneous merchants, are set up to accommodate fast-moving customers. In contrast, appliance shoppers want to park for awhile and browse through the stock at leisure. They rarely have enough money in their pockets to purchase an air conditioner on the spot, for example.

Huge, "full-line" appliance distributors frequently tend to welcome any type of dealer who can expose their "table stuff," like toasters and roasters, irons and fans, radios and lamps, etc., etc. Along with this "table stuff" they may place a refrigerator or room air conditioner. But major appliances are something else again.

One big distributor of "white goods" comments bitterly that supermarkets and department stores which use room air conditioners as "loss leaders" (to lure five-and-dime purchasers) are wrecking the major appliance dealers in his territory.

The home equipment specialist can't make up lost profits on HIS specialties by marking up other lines, such as hosiery, bedding, floor lamps, TV, and high-style dresses. He sinks or swims with his Big Ticket products.

Manufacturers of major appliances possibly can be blamed for the "scrambled retailing situation—even though their intentions were good originally. Not only have some of them overfranchised (appointed too many dealers) but they have overemphasized their story that appliances are "pre-sold" by manufacturers' advertising *via* TV and national magazines.

All you have to do, they sometimes tell a marginal retailer, is put one or two of their products in your shop. The manufacturer's advertising will do the rest—bring in store traffic, close sales, etc.

Could be that the retailer who swallows that story sees no reason for doing any selling himself. Hence, when the going gets rough, he cuts prices to get rid of inventory, and then—eventually—abandons the home equipment field altogether.

That's a helluva way to run a railroad (i.e., a home equipment business). It runs up a manufacturer's distribution costs, and it hurts the better dealers.

"Too many cooks spoil the broth."

Too many INEXPERIENCED dealers, likewise.

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AIR CONDITIONING & REFRIGERATION NEWS

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F. M. COCKRELL, *Founder*

'The Conscience of the Industry'

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VOLUME 82, No. 15, SERIAL No. 1,498, DECEMBER 9, 1957

READER QUESTIONS CONTRACTOR'S CHARGES FOR WIRING, DUCTWORK IN RESIDENTIAL JOBS

370 Lakeview Pk.
Rochester 13, N. Y.

Editor:

I have read your detailed story in the Nov. 4 issue of the NEWS and from my standpoint and knowledge of ductwork and wiring of both heating and air conditioning units, the actual profits are hidden in these costs.

See case #18, ductwork charges of $844.79. This is an over charge of at least $500.00. Case #17 is at least $150.00 high—the average cost of a single story ranch style house 6-7 rooms for all necessary ductwork and labor involved should not exceed $300.00. In most cases the electrical costs have been doubled. No doubt these contractors doing his ductwork and electrical sub contracts were not required to bid on same, resulting in about 75% of the over charges. I think it would be wiser in the future to secure facts and figures from contractors who do complete jobs. That is, selling, installing ductwork, electrical and service. I could clear $10,000 net profit on these jobs.

ELMER E. TAYLOR

Editor's Note: As was hinted in the article accompanying the detailed "case histories," the prime contractor has positive knowledge that there are no hidden profits involved in the electrical and ductwork charges, but the NEWS is not permitted to reveal the reasons why the contractor knows this to be a fact.

Regarding Case No. 18, it was explained in the accompanying article (columns 3 and 4, page 15) that ductwork charges were admittedly excessive because the "finicky" customer demanded many extras and "looked over the shoulder" constantly while the men worked.

For more information about products advertised on this page use Information Center, page 16.

Air Distribution Requirements In Year-Round Air Conditioning

4. Fundamentals of Conditioned Air (Cont.)

By Frank D. Klein

Frank Klein has been associated with the air conditioning and refrigeration industry for over 20 years. An engineering graduate of the University of Michigan, he has held executive positions with a number of leading manufacturers, and has served as a consultant to both manufacturing and distributing firms, in the heating as well as the cooling field.

Up to this point the fundamental laws governing the behavior of air atmospheres have been explained briefly. Chemical Balance has been investigated to that point where recognition of the need for a balance should be obvious. Weight and Density has been generally explained and its influence pointed out in temperature volume and pressure volume relationships. Enthalpy as illustrated by Total Heat was investigated in order to point out the influence of both sensible and latent heat.

However, thus far we have dealt only with the pure physics and chemistry of the science of conditioning air. How do these fundamental laws affect the behavior of air atmospheres?

'Thermodynamics Can Be Complex'

The thermodynamics involved in conditioning air atmospheres, particularly in the cooling cycle, are at times complex. However, the simplest of them are the affects of the laws discussed on *condensation* and *vaporization.*

Vapor in the physical sense, is any substance in the gaseous state, originating from a solid or liquid, which through some process has changed its physical state from the solid or liquid to a gas. Vaporization is the process through which the substance passes to effect the change. Vaporization, though the process should never be confused with evaporation, for it is specifically the vaporization that takes place only at the free surface of a substance such as a liquid, and in so doing only occurs below the boiling point of the liquid.

Boiling such as in water that evolves steam, induces vaporization but the process originates within the liquid (water) evolving steam, which passes through the surface and into the air as a vapor.

What Vapor Pressure Is

Throughout the process of conditioning air and investigating the effect of laws governing its behavior under varying conditions, we will encounter the term vapor pressure. Vapor pressure is that portion of the atmospheric pressure resulting from the amount of water vapor in the air. For our purposes in heating and otherwise conditioning atmospheres, when the term vapor pressure is used it means absolute pressure, which we previously investigated, not that pressure read by gauge alone.

It is important to understand evaporation. If we spread rubbing alcohol on our skin surfaces, the alcohol will eventually "evaporate." The evaporation involved occurs only at the free surface of these liquids and though subject to temperature, occurs below the boiling point.

The temperature of the skin of course is an influence on the rate of evaporation of the alcohol; the ambient temperature surrounding the bodies of water is of course an influence, yet in both cases the "boiling" of the liquids is not required to effect evaporation.

The *rate of evaporation,* or the time necessary under a given set of conditions to cause a known quantity of liquid to change from its liquid state, at its free surface area, to a vapor, is the important physical effect with which we are constantly concerned in the conditioning of air atmospheres. The rate of evaporation increases with increases in temperature.

Furthermore the more surface of the liquid exposed the greater the quantity evaporated. Next the rate of evaporation is far greater into dry air than into air possessing considerable quantities of water vapor. The rate of evaporation is directly proportionate also to the air velocity at the surface.

The rate of evaporation is also influenced by the increase or decrease of pressure, atmospheric or otherwise, at its surface. Last but not least the rate of evaporation is peculiar to different substances and/or liquids.

Those who understand evaporative cooling have observed the effect of the rate of evaporation on temperature, and know that temperatures under given conditions can be lowered by the rate of evaporation of the water on the cooling pad as influenced by air velocity and the percentage of water vapor in the air being passed over the pad.

Physically, this process involves the vaporization of a calculated amount of liquid, with an amount of heat equal to the latent heat of vaporization, being extracted from the liquid, the area and other objects in the area into which the air is discharged.

When the latent heat of the area is equal to that of the latent heat of vaporization the process no longer becomes possible, inasmuch as the air in the area is weighted with an equal amount of water vapor. Thus the reason why evaporative cooling works well in dry air climates and poorly in wet air or humid climates.

Condensation is the counterpart and opposite factor of vaporization. Where vaporization is the process of changing from a liquid to a gas or vapor, Condensation is the process of changing from a gas or vapor to a liquid, or a solid substance. Condensation takes place only in the extraction of heat as the pressure remains constant, or in compression of the vapor when temperature stays constant.

Practical observation of this effect can be observed on a cold glass of water set in a humid atmosphere, where the cooling effect of the water on the glass sides, acting as a transfer medium, extracts moisture from the air and collects it as "beads."

(To Be Continued)

For more information about products advertised on this page use Information Center, page 16.

What Was New
At the ARI Show

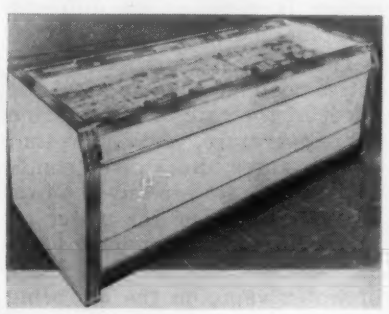
On this page and the following three pages of this issue, the NEWS presents pictures of new products offered at the 10th Air Conditioning & Refrigeration Industry Exposition in Chicago. In the Dec. 2 issue the NEWS began its picture coverage of the Show and continues it in this issue. More pictures will appear in future issues. For further information on these new products, please use "Information Center" blank below and refer to Key Numbers.

——KEY NO. G-12218——

ADMIRING A NEW 6-ft. dairy case produced by C. Schmidt of Cincinnati is Ingebord Jorgenson of Chicago. The model TD-6 case has no glass and uses blower coil refrigeration.

——KEY NO. G-12219——

SELF-CONTAINED ILI-8 low temperature ice cream and frozen food merchandiser was introduced by Warren. There's a 12-ft. model for frozen foods also due soon, both units with optional "Color-amics" bands at no extra cost. "Island Master Merchandiser" keeps 864 ice cream packages brick hard, it is claimed.



——KEY NO. G-12220——

A GIANT model of the new "Drymaster" filter-drier was the center of a contest at the Mueller Brass Co. booth. The giant drier was filled with briquetted desiccant. Donna Wallis and Julie Jarrett, both of Chicago, passed out contest blanks.

——KEY NO. G-12222——

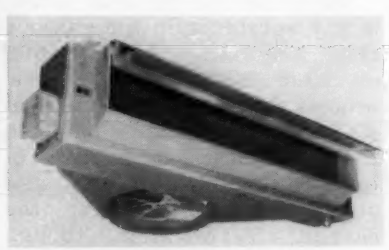
R. J. LICKTEIG, right, vice president, sales, of Queen Products, Inc., subsidiary of King Seeley Corp., explains the unique features of the Scotsman SF-8 Super Flaker to Jerry Jernberg of Minneapolis. The Super Flaker can make up to 4,000 lbs. of crushed ice per day.

——KEY NO. G-12223——

"MOISTURE MAGNETS"—driers charged with molecular sieves—are displayed by Bill Moran and Mike Parker, Midwest sales representatives of Kenmore Machine Products.

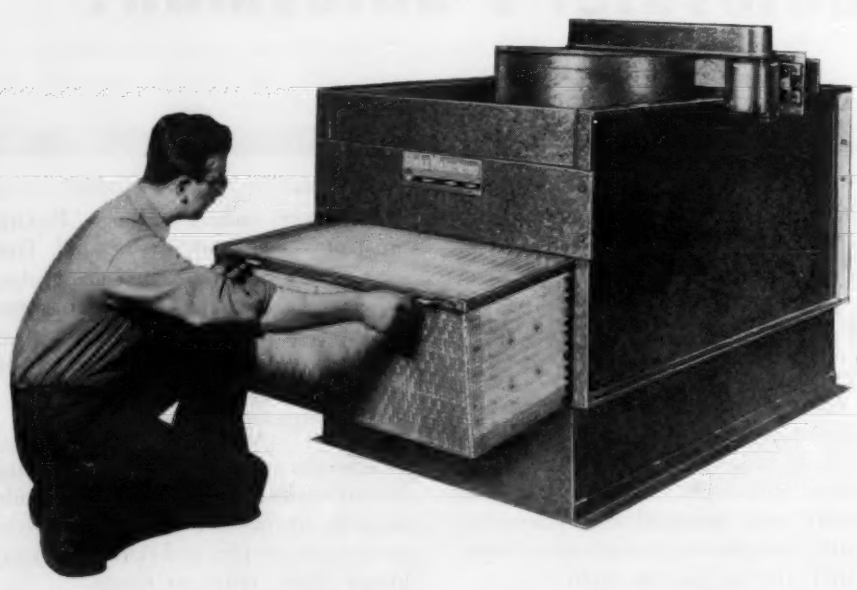
——KEY NO. G-12221——

"A PRODUCTION LINE facility in miniature" is the way Claude Dungan, left, sales engineer, describes the portable charging station to Chuck Clapper, Kinney Mfg. Co. The Model 4 charging station shown here is manufactured by Airserco Mfg. Co., and allows charging of clean, dry refrigerant into the evacuated system.



——KEY NO. G-12224——

ELECTRIC DEFROST unit, Recold Corp.'s "Deltric," is designed specifically for 28° meat storage rooms and other applications with light frosting problems. Deltric combines features of the "Delta" unit with electric defrost simplicity.



Information Center

For *more information* on What's New products, current literature and catalogs available, equipment advertised in AIR CONDITIONING & REFRIGERATION NEWS use Key Numbers where designated or specify products advertised and we'll see that you receive this information promptly.

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(list name, page, and issue date)

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What's New or Current Literature Available

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For more information about products advertised on this page use Information Center, page 16.

What Was New

KEY NO. G-12226

SEEMING happy with their new "Dri-Cor Filter-Drier" are Bess Henry, president of Henry Valve Co., and Evan Jones, chief engineer. Jones claims the item is first of its kind incorporating a combination of ceramic-fired desiccant filter-core, together with granular desiccant.

KEY NO. G-12230

POSING with the new Frick Co. "Eclipse" compressor are John H. Carter, branch manager, St. Louis, and Mahlon B. Watts, sales promotion manager. Shown is Model AHP-789, equipped with capacity control and suitable for use on ammonia or Refrigerant-22.

KEY NO. G-12231

THE EASE of operation of the "Free 'n Easy" air conditioner window is demonstrated by Mrs. Carol Ritter. The window can be raised or lowered completely so there is no "blind" spot which cannot be washed. Sliding windows are also available from Ritter Metal Corp.

KEY NO. G-12232

"MOTOR BRAIN" claimed to eliminate need for a larger appliance motor to do an undersized job and permits the right-sized motor to run safely at maximum working limit was debuted by Spencer Thermostat Div., Metals & Controls Corp. Motor brains shut off motors when winding temperature reaches maximum safe limit. "Klixon" inherent overheat motor protector is used in all types of electric motors.

KEY NO. G-12233

A GIRL can safely handle a part cleaned in X-220, a cleaner developed by Sealed Unit Parts Co., Inc. The new cleaner permits removal of sludge, insulation, and rust from components of a burned out hermetic without acid dipping.

KEY NO. G-12227

CHAS. C. HANSEN, left, president of Refrigerating Specialties, explains the operation of the company's new 3-way water regulator for cooling towers to Ed. Conrad, Chicago. The miniature setup illustrates the manner in which the new regulator maintains constant condenser pressure in cold or warm weather.

KEY NO. G-12228

NEW AIR-COOLED condenser line with blower-type fan providing quiet operation, is being offered in capacities of 3 through 8 tons by Marlo Coil Co. Walter Moses (left), Engineering Sales Co., New Orleans, looks it over in company of Robert Buss and Walter H. Frenger of Marlo.

KEY NO. G-12229

FOREIGN VISITOR Alex Hayek of Beirut, Lebanon, listens while Alfred Levin, sales manager of Jordon Commercial Refrigerator Co., explains the features of the new Model 1515 combination refrigerator-freezer. The unit is especially designed for fast food service locations.

What Was New

At the ARI Show

On this page and other pages of this issue, the NEWS presents picture coverage of new products that were shown at the 10th Air Conditioning & Refrigeration Industry Exposition in Chicago. For more information on these new items, please use Key Numbers and refer to the "Information Center" blank on page 16. Additional pictures will appear in a later issue.

——KEY NO. G-1220——

A NEW MIXED FLOW blower featuring "symetrically suspended motor and flat power characteristics" is displayed by Kenneth A. Merz, assistant chief engineer of Torrington Mfg. Co.

——KEY NO. G-1221——

NEW PEERLESS SPONGE COIL for commercial refrigeration featuring increased exposed surface for heat transfer brings beams from Mel Knight, vice president of Peerless of America, Inc. and model Ingebord Jorgensen.

——KEY NO. G-1222——

MAJOR NEW item exhibited by Ranco Inc. was a reverse cycle valve designed without any metal-to-metal contact and so designed that during transfer period there is sufficient by-pass to prevent overloading the compressor.

——KEY NO. G-1223——

POSING with the new Kramer Trenton "Indoor Unicon" is Irving Cohler, Chicago representative. Especially designed for supermarkets, the new unit features a damper box for recirculating warm air in the machine room or into the machine room or into the market. The Indoor Unicon makes use of snap-on filters and may be used with several compressors.

——KEY NO. G-1224——

DISPLAYING a new suction line filter which filters "down to 5 microns with low pressure drop" is M. J. Meiklejohn of the McIntire Co.

——KEY NO. G-1225——

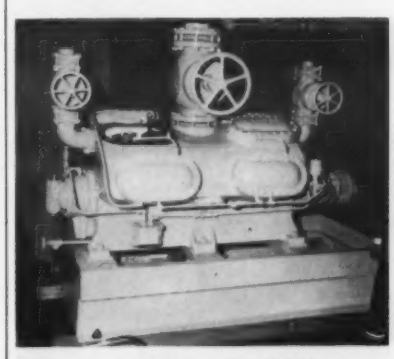
DESIGNED for heat pump conversions of air conditioning units up to and including 2 tons and for hot gas defrost installations is this "derco" manually operated reverse cycle valve by Watsco, Inc. Incorporating rotary design and having only one moving part, valve is said to have mechanical and electrical difficulties eliminated.

——KEY NO. G-1226——

A NEW semi-circular unit cooler with electrostatic filter and built-in heat exchanger was featured in the booth of Refrigeration Appliances, Inc.

——KEY NO. G-1227——

NEW, IMPROVED ice bank control (type 16A35-12) by White-Rodgers Co. is designed to provide longer compressor off cycles in milk cooler operation. Bank of ice functions as a means to store refrigeration and new sensing element helps regulate compressor to maintain bank of ice at desired thickness. Sensing element has a stainless steel cup containing two stainless steel diaphragms that form inner and outer fill chambers. A diaphragm and cup are at opposite end which transmit motion to the switch. Liquid in the inner chamber acts as transmitting medium.

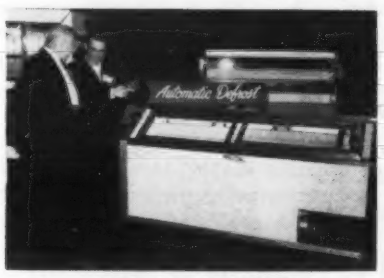


——KEY NO. G-1228——

DESIGNED to operate with Refrigerant-12, 22, or ammonia, this 16-cylinder compressor unit by Vilter Mfg. Co. and its 12-cylinder counterpart permit "maximum capacity in a minimum of floor space." Spring loaded safety heads are a protective feature on both models.

For more information about products advertised on this page use Information Center, page 16.

What Was New
At the ARI Show

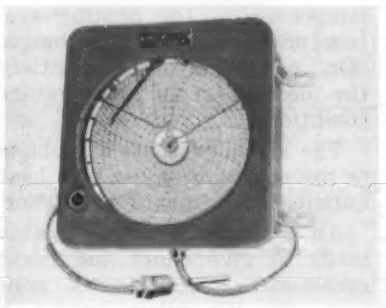


—KEY NO. G-1229—

ALEXIS HAYEK of Beirut, Lebanon, listens to Maurice Zatko, traveling representative of Fogel Refrigerator Co. as he describes Fogel's new Automatic Defrost Angle Vision Freezer.

—KEY NO. G-12214—

SHOWING that a properly insulated motor will not burn out during extended periods of damp weather, G. Russel Eddy, vice president of Marco Industries checks one multi-speed fan motor which was running under water for the entire duration of the exhibit.



—KEY NO. G-12215—

ELECTRIC GRAPH line temperature recorder that charts temperature cycles without use of ink, this Electric Auto-Lite, Industrial Thermometer Div. unit has two small mercury batteries enclosed in the case to energize a transistor oscillator connected to stylus arm. Available for 24-hour or seven-day rotation, temperatures are recorded on a 6-in. evenly calibrated chart. Remote reading is provided by use of capillary tubing in ranges from -40° to 550° F. Model 2200 is made in either wall mounting case, portable, or self-contained type case.

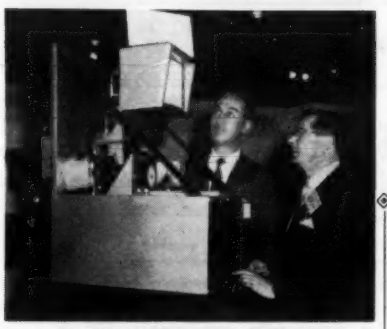
Many of the pictures on this and the preceding page were taken for the NEWS by Irving Alter of the Harry Alter Co., Chicago. Pictures of new products introduced at the show are offered on pages 16-19 of this issue.

—KEY NO. G-12216—

NEW low temperature insulation has been offered by Mundet Cork Corp. Said to have high resistance to vapor transmission and moisture absorption, expanded polystyrene pipe covering and block insulation is custom-molded to specific size and thickness for precision fit. It is light, claimed to have high compressive strength, ease of application, low thermal conductivity, and durable service.

—KEY NO. G-12217—

A CUTAWAY of the ice making evaporator is shown to Robert W. Koppen, Decatur, Ill. by Harold Kain, vice president, sales, of Koch Refrigerators, Inc. The evaporator is part of the "revolutionary" new ice maker shown by Koch, which has no moving parts in the ice-making mechanism.



—KEY NO. G-12210—

NEW AUTOMATIC DEFROST system for unit cooler, introduced by Tenney Engineering, Inc., gets the attention of M. V. Sandhofer, Service Supply Co., Victoria, Texas, as Sidney Shapiro of Tenney looks on.

—KEY NO. G-12211—

DESIGNED to permit greater receiver capacity are these two water-cooled units shown for the first time by Copeland Refrigeration Corp. On display were model ZR-500W and model ZR-750W, both of which are available with receiver only for use with remote condensers.

—KEY NO. G-12212—

ADAPTABLE TO COMPLICATED control problems is a new 2-pole thermostat with auxiliary switch, introduced by the Wilcolator Co., and being demonstrated by P. E. McCaughey (left) of the company to Ken Mattley, D. D. Darnell Co., Mission, Kan.

—KEY NO. G-12213—

"INHERENT OVERLOAD protection" is one of the advantages claimed for these two new units by Bendix-Westinghouse. On the left is a 5-hp. air-cooled unit; on the right a 2-3-hp. water-cooled unit. Both feature fully pressurized lubrication and refrigerant-cooled motors.

Design and Operation of Low Voltage Thermostats

4. Selection of Heat Anticipator

By Douglas S. Sterner, Sales Manager, Air Conditioning & Refrigeration Controls Div., General Controls Co.

CYCLE RATE—AND ITS AFFECT ON DIFFERENTIAL, DROOP, AND ANTICIPATOR SELECTION

Cycle rates, or the time for one "On" period and one "Off" period, are determined by a combination of several factors:

1. The system capacity in relation to the thermal load.

2. The system "lag" which can be affected by:

a. The mass of metal which may be heated or cooled and which will still retain stored-up heat or cold *after* the heating or cooling system has been stopped.

b. The rate of air circulation or, to put it another way, the rate of air changes. This is a function of the system blower and is a relation between the c.f.m. delivered to the conditioned space and the total c.f. of the conditioned space.

3. The amount of heat or cold anticipation.

Under light load conditions—say, for heating—the system will quickly satisfy the desired condition as set on the thermostat.

As the load conditions increase due to dropping outside temperatures, the heating system must operate with longer "On" periods in order to satisfy the desired room temperature conditions.

The above presents a problem to the selection of the best heat anticipator, as mentioned earlier.

An oversized heat anticipator tends to give short and rapid cycles and close differential control. On the other hand, an undersized heat anticipator tends to give long and infrequent cycles and rather wide differential control.

The equipment to be controlled must be carefully weighed in determining whether rapid or slow cycling is desired. Generally speaking, rapid cycling because of the resulting close differential control, is to be desired if the controlled equipment is something like a gas valve which can stand the rapid cycling.

On the other hand, if the controlled equipment is a compressor, a heat pump, oil burner, or a stoker, rapid cycling may be harmful to the equipment, and therefore, a slower cycle may be required even at the expense of widening the differential of the control—which results in greater room air temperature variations.

In any case, the anticipator should be sized so that it will **not** cause excessive "droop" when the system is operating at design conditions. Therefore, this consideration is of major importance in anticipator selection, along with cycle rate.

OUTDOOR COMPENSATION

The problem of "droop" occurs when a system—say a heat system—operates for long "On" periods. "Droop" results because of the continuous periods of heat applied by the heat anticipator and the heat generated by the current flow through the contacts during the "On" period.

The result is to thermally offset the control point of the thermostat to control at a lower temperature than the set point. Since such long "On" periods occur during low outside air temperature conditions, it becomes apparent that it would be desirable to provide a means of adjusting the heat supplied by the heat anticipator so that it ties in more closely with the outside air temperature.

Thus the amount of heat supplied to the thermostat bimetal would normally be reduced proportionately as the outside air temperature drops so as to hold the "droop" to a minimum. This brings up an interesting thought, however, and that is the relation of "droop" to heating systems.

COLDWALL SYSTEMS

Referring to Fig. 9, conventional wall heaters, space heaters, and many forced air furnaces normally supply the heat

(Continued on next page)

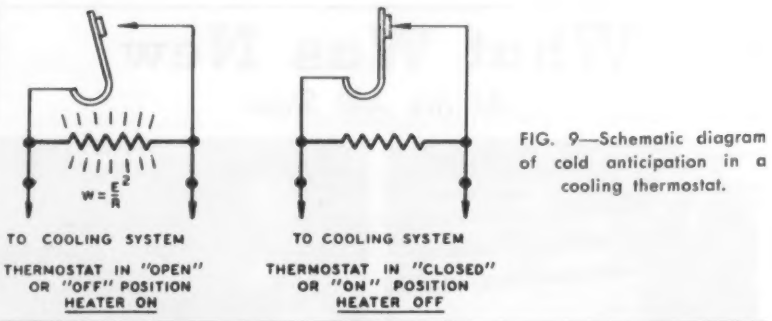


FIG. 9—Schematic diagram of cold anticipation in a cooling thermostat.

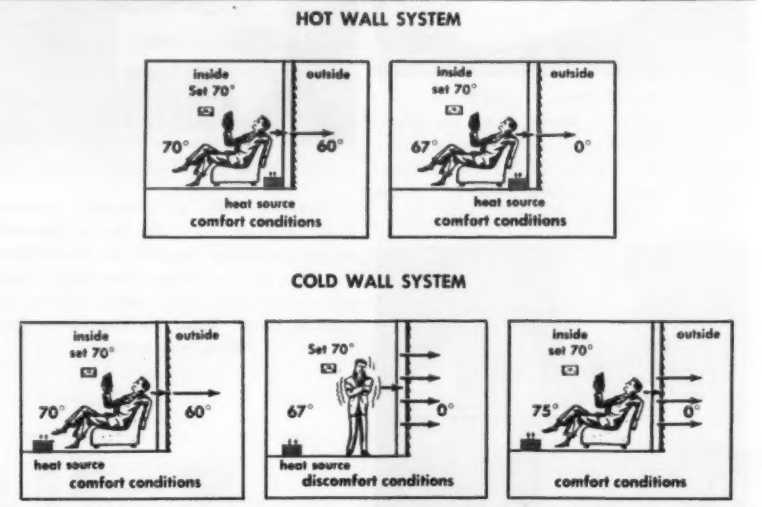


FIG. 10—Feeling of discomfort increases as outside temperature drops. This is frequently called "cold 70" since humans are uncomfortable even though the room thermostat may be controlling at a supposedly comfortable 70° F.

For more information about products advertised on this page use Information Center, page 16.

Low Voltage Thermostats--

(Continued from preceding page)

from an inside wall. Thus the outside walls are commonly "cold" walls; since heat flow is from a warmer object (in this case, the human body) to a colder object the outside wall, it frequently becomes possible to be uncomfortably cool when the outside air temperature is low even though the room air temperature is at the "set" point.

The feeling of discomfort increases as the outside temperature drops (Fig. 10). This condition is frequently called "cold 70" since the human body is uncomfortable although the room thermostat may be controlling at a supposedly comfortable 70° F.

On systems of this type, it is desirable to compensate for the cold outside walls by actually increasing the room air temperature as controlled by the thermostat and this could be done by varying the heat supplied by the heat anticipator as well as by manually changing the thermostat set point. In a sense the control point of the thermostat is raised by changing the normal cold weather "droop" which actually causes the thermostat to control at a *lower* temperature than that for which it is set and might be called "negative droop" to a "positive droop" so that the room thermostat will actually control at a temperature *higher* than the set temperature.

Methods of achieving the above results automatically have been developed. This can be achieved in several ways. For example, a thermally sensitive resistor, called a "thermistor," can be mounted on an outside wall of the home where it will sense outside air temperatures. The thermistor is then, in effect, wired to a thermostat heater and controls the heat supplied to it as a separate circuit—the heater being completely independent of the thermostat control circuit.

Thermistors can be selected to increase the control point of the room thermostat above the set point by almost any desired amount—but, this amount is fixed for the specific thermistor.

Fig. 11 is a chart showing the operation of such a system in which the inside temperature control point is increased 1° F. for each 20° drop in outside air temperature.

A completely different condition exists in systems which supply the heat directly at or along the cold surfaces. Such systems as radiators, fin-tube base board heaters, convectors, and forced air perimeter systems as well as radiant heat systems supply the heat in such a way as to nullify the effects of the "cold wall."

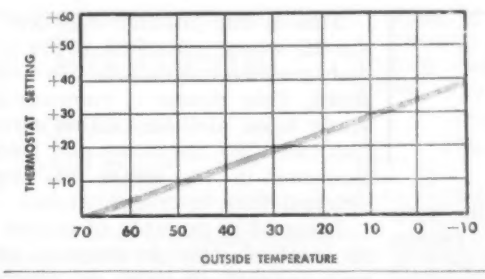


FIG. 11—Chart showing operation of thermistor in which inside temperature control point is increased 1° F. for each 20° drop in outside air temperature.

In these systems, not only is it unnecessary to raise the room thermostat control point above the "set" point as the outside temperature drops, but generally it is undesirable. Actually, tests and experience have shown that it is desirable in such systems to lower the inside temperature as outside temperatures drop. In such cases, the normal "negative droop" of room thermostats is desirable.

(To Be Continued)

Death Notices

Franklin R. Galway, 48, an engineer for Keist Air Conditioning Co., died in the Pittsburgh suburb of Glenshaw.

* * *

Raymond Stoesser, director of technical and manufacturing services for American Radiator & Standard Sanitary Corp. has died in New York City of a heart attack. He was 54.

* * *

William E. Offerhamer, vice president of Niagara Blower Co. recently was fatally stricken in Buffalo. He was 69.

Offerhamer helped found the firm in 1919 and was chief executive of its plant in Buffalo. He assisted Willis H. Carrier in the development and testing of air conditioning equipment from 1913 to 1919 at Buffalo Forge Co. He also supervised installation of the first major air conditioning units in plants producing explosives during World War I.

* * *

Lawrence P. Brady, national account representative of Worthington Corp., died of a heart attack in New York City recently. He was 49.

Founder and president of the former United Conditioning Corp., Croton Falls, N. Y., Brady had been manager of the New York City office of Trane Co. before joining Worthington in air conditioning and refrigeration.

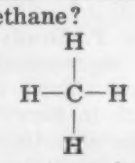
BASIC CHEMISTRY

(As Applied In Refrigeration)

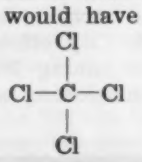
Part 4—Refrigerant Breakdown

By Frank J. Versagi

Oils are intimate mixtures of hydrocarbons—compounds containing only carbon and hydrogen. Refrigerants of the "Freon" type are chemical cousins of such hydrocarbons. Remember our graphic formula for the simple methane?

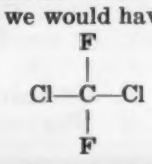


If we were to replace, by suitable chemical means, each of the hydrogen atoms with a chlorine atom, we would have



This compound is the very familiar cleaning fluid—carbon tetrachloride or "carbon tet." A more formal chemical name would be tetrachloromethane. All in one piece like that, this seems like quite a mouthful. Actually, tetra means four, chloro refers to chlorine, and methane reminds us that the original compound which was changed was simple methane.

If, instead of replacing all of the hydrogen of methane with chlorine, we replace two of them with chlorine and two with fluorine, we would have



This is the popular Refrigerant-12 whose chemical name is dichlorodifluoromethane. Broken down, this means a compound made from methane which now has two (di) chlorines and two fluorines in the place of the original four hydrogen atoms.

It would be possible, of course, to replace the hydrogens in methane with fluorine, in which case we would have tetrafluoromethane.

Value of Knowing Chemical Make-Up

The value in being familiar with the chemical make-up and terminology of the refrigerants is primarily that in discussing the various chemical reactions which can take place in a refrigerating unit, we will be able to use one material as an example. The basic reaction thus described will be valid for all the similar refrigerants, just as the combustion of methane served as an example for the oxidation or combustion of all hydrocarbons.

Table 1

Popular Name	Chemical Name	Chemical Formula
Carbon Tetrachloride	tetrachloromethane	CCl_4
Refrigerant-12	dichlorodifluoromethane	CCl_2F_2
Refrigerant-11	trichloromonofluoromethane	CCl_3F
Refrigerant-13	trifluoromonochloromethane	$CClF_3$
Refrigerant-22	monochlorodifluoromethane	$CHClF_2$
Refrigerant-113	trichlorotrifluoroethane	$CCl_2F:CClF_2$

Where only chlorine has been used to replace hydrogen in a hydrocarbon, we have a *chlorinated hydrocarbon:* if fluorine has been used alone, we have a *fluorinated* hydrocarbon.

Now chlorine and fluorine belong to a chemical family called *halogens.* Generally, when speaking of refrigerants of this type which may contain chlorine and fluorine in many combinations, we speak of *halogenated hydrocarbons.* This term will bring to mind *any* chemical compound, derived from a hydrocarbon, which contains chlorine or fluorine or both. The table shows typical refrigerants and their chemical names and formulas.

Those refrigeration servicemen who have not had the misfortune to be exposed to chemistry before this time would do well to pause here and have a beer!

Seriously, it is not necessary for the serviceman to remember the chemical name for Refrigerants 12, 22, 113, and the rest; it is only necessary for him to have a basic idea of what the chemical names mean and how they are derived, for this will enable him to understand more readily what follows.

Check Formulas In Table

A good way to be sure that you have the idea is to cover the formulas in Table I, then try to write them after reading the chemical name. The word trichloromonofluoromethane, for example, should bring to mind a compound with three chlorines and one fluorine. It could be written CCl_3F or $CFCl_3$ or even FCl_3C; the important thing is to know the significance of the name. Keep calling it Refrigerant-11 or whatever trade name you like.

When we consider the chemical reactions possible with halogenated hydrocarbons, we are dealing with a family of reactions. Generally speaking, a reaction which is valid for Refrigerant-12 is also valid for the other refrigerants although the temperatures of such reactions may differ, or the general conditions may vary.

Theoretically, if we could completely tear apart a halogenated hydrocarbon, we would get the particles which went into its make-up.

Thus, if you could tear apart Refrigerant-12 or CCl_2F_2, we would get one atom of carbon, two each of chlorine and fluorine. If we could disassemble Refrigerant-22, or $CHClF_2$, we would get the atom of carbon, one of hydrogen, one of chlorine, and two of fluorine.

3 Reactions of Significance

In practice, however, this sort of dismantling of the halogenated hydrocarbons does not occur. The only way to get these compounds to break down is by forcing them to enter into specific types of chemical reactions. Three of these reactions are of interest to the refrigeration serviceman.

1. When the refrigerant reacts with heat (pyrolysis).
2. When the refrigerant reacts with air (oxidation).
3. When the refrigerant reacts with water (hydrolysis).

Refrigerants of the halogenated hydrocarbon type are very stable chemical compounds when they stand alone. This means that it takes very severe conditions to break them down. For example, "Freon" Products Div. of duPont was able to determine that "Freon-12" would remain stable up to temperatures of 1,000° F. when it is alone in a quartz tube. Only at this ex-

(Continued on next page)

For more information about products advertised on this page use Information Center, page 16.

Refrigerants--

(Continued from preceding page)

treme temperature is there any trace of free halogen indicating decomposition.

When the same refrigerant is heated in steel, however, thermal decomposition begins at 480° F. —a significant lowering. Generally speaking, metals have the property of lowering the temperature at which pyrolysis will take place. This has practical significance for the refrigeration serviceman since iron and copper are among the metals which have the most pronounced effect on lowering this temperature.

Keep Systems Below 250° F.

Going a step further, when oil is present with the halogenated hydrocarbon, the mixture is even less stable than the refrigerant alone in contact with metal. Based on extensive tests, it is suggested that system temperatures be kept below 250° F. to prevent this type of breakdown.

In evaluating refrigerants by tests of this type "Freon" Products Div. rated "Freon-14" as the most stable and "Freon-11" as the least stable. Even the least stable refrigerant, however, breaks down at the rate of only 2% per year under extremely severe conditions.

When pyrolysis takes place, the halogenated hydrocarbons tend to break down into smaller molecules, into simple hydrocarbons, and also to liberate chlorine or fluorine. Refrigerants containing hydrogen can form acid even though no moisture is present.

Sample Reaction

A sample reaction would look like this.

Refrigerant-22 plus heat equals new halogenated hydrocarbon plus hydrochloric acid

$$CHClF_2 + \Delta = C_2F_4 + HCl$$

The only time temperatures in a unit can reach the point where pyrolysis will occur is in the event of a hermetic burnout. In this case, the temperatures generated by the arcing windings can cause pyrolysis. In the event of hydrogen bearing refrigerants, such pyrolysis accounts for the fact that serious acid burns can be caused by handling the oil from a burned out unit. The acid has formed during pyrolysis (during the sparking and shorting) and has been absorbed by the oil.

In normal operating conditions, however, even where temperatures are high (around 300° F.), pyrolysis will not occur.

(To Be Continued)

For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

Only 25¢ each.

Refrigeration Problems
And Their Solution
(As Written by Paul Reed)

Carbon Tet In Field Service

The following letter probably reflects a widespread feeling regarding the use of carbon tet in refrigeration work, and probably in other classes of work also.

"A Refrigeration Problems column refers to hazards in the use of carbon tetrachloride. This is the first time that we have heard of any danger from using carbon tetrachloride, and we would appreciate it if you would give us more information on this subject.

"We have always considered carbon tetrachloride as the safe and very best cleaning solvent, so this article surprised us very much. Also, will you please suggest some other effective solvent, instead of carbon tetrachloride, that we can safely use."

CARBON TET TOXIC ALTHOUGH NON-FLAMMABLE

Since carbon tet is non-flammable and does not have a very offensive odor, it has been commonly believed that it is also non-toxic. Nothing could be farther from the facts.

In refrigeration work the word "toxic" is chiefly used in connection with gases that we breathe—refrigerant gases and fumes from solvents and other liquids.

"Toxic" literally means poisonous, but "poisonous" is relative. Some poisons, such as potassium cyanide, act very quickly; others slowly. Very small amounts of some poisons, such as snake venom, are deadly; others are milder, and large amounts may be taken before harmful effects are even noticed. Some poisons are only temporarily effective and are thrown off by the human system; others cause permanent injury.

Carbon tet is in this latter class; it causes permanent injury, and its effect is cumulative. That is, we breathe a little one time and it does its damage. Again we breathe some more carbon tet, and it adds to the damage. Thus, a number of short exposures may be just as dangerous as a heavy exposure.

This is less true of most of the other solvents, even those which are slightly toxic. Most of them are thrown off by the human body, and except in cases of very heavy and continued exposure, there are no permanent after-effects.

When breathed, carbon tet is especially hard on the liver and kidneys, which it is said to injure permanently, even in comparatively small quantities. The maximum allowable concentration is 50 parts (by weight) of carbon tet in one million parts of air. More than that very small amount may be dangerous.

Laboratory tests have shown that illnesses, some quite serious, that were supposed to have been from "natural" causes, were in reality traced to over-exposure of the individual to carbon tetrachloride fumes.

Carbon tet is also harmful to the skin. It not only dries the skin by dissolving out the natural oils, but it causes the skin to become scaly, similar to that caused by a burn. This condition is difficult to cure, for the oil glands themselves are injured.

If you do use carbon tet, use it out of doors or in a room that is *well ventilated*. By well ventilated, we do not mean just an open window, but instead, a positive air movement carrying the carbon tet fumes *away from* the workman. This positive air movement may be obtained by cross ventilation, but preferably by an exhaust fan.

If you work over a tank of carbon tet, the National Safety Council recommends that you wear a gas mask.

Keep your hands out of carbon tet. Wear rubber gloves.

WHAT SOLVENTS TO USE

The question then arises, "What shall we use instead of carbon tet?" Unfortunately, there is no known solvent that is as effective as carbon tet, that is completely non-toxic and non-flammable. We must be willing to accept a small hazard of flammability. There are several very good solvents that may be used cold, which although somewhat flammable, are comparatively safe if used with reasonable care.

Trichlorethylene is similar to carbon tet and is used in some "degreasing" machines. Although it is only about one fourth as toxic as carbon tet, it still is too dangerous for unrestricted use, especially in poorly ventilated rooms. Also, hands must be kept out of trichlorethylene.

High test naphtha has a flash point of about 30° F. This means that even at a temperature as low as 30° F., the fumes from high test naphtha are flammable. So low flash point naphtha is too highly flammable in ordinary room temperature, for ordinary use.

STODDARD SOLVENTS

Some years ago a man named Stoddard set up some specifications on a solvent that is now called by his name "Stoddard Solvent." It is made under various trade names by most of the major oil and gasoline refiners—Stanisol, Mineral Spirits, Shell-Sol, Sorasol, etc.

Stoddard Solvent is sometimes referred to as "safety solvent" and "high flash point naphtha." It is not completely safe, but is comparatively so, and has been accepted for indoor use by the National Board of Fire Underwriters, if the room is well ventilated and certain precautions are taken against open flames, sparks, etc. Also, Stoddard Solvent is not very safe at temperatures above 100° F., for at about 105° F. the fumes are flammable.

Stoddard Solvent does a very effective cleaning job on oily and dirty parts, but it does leave a slightly oily film.

CLEANING MIXTURE NO. 49

The Electrochemicals Department of duPont in its Bulletin S6-1049, describes a solvent which they call "Cleaning Mixture No. 49." It consists of (by volume)

70% Stoddard Solvent
25% Methylene Chloride (Carrene No. 1)
5% Perchlorethylene

This may be made up with 1 part (gallon or other measure) of perchlorethylene, 5 parts methylene chloride, and 14 parts Stoddard Solvent.

This mixture has a flash point above that of Stoddard Solvent only, even when 20% of the mixture has been evaporated, so this mixture is only about as flammable as kerosene.

It is somewhat toxic but only slightly so. However, rooms in which the mixture is used, especially if it is sprayed, as on motor windings, should be well ventilated.

You should not put your hands in it; use rubber gloves. Also, use care not to get it on your face or in your eyes. This advice applies to Stoddard Solvent also.

Its big advantage over Stoddard Solvent only, is that it evaporates rapidly and leave the surface with little if any film or other type of residue.

It is not corrosive, and is inert to electrical insulation. In fact, it was originally developed for washing motor and generator windings, and is widely used in motor repair shops.

Although carbon tet is non-flammable, it is decomposed if subjected to a high temperature, such as a flame or red hot metal, to form some highly toxic fumes including chlorine and phosgene. Therefore, keep carbon tet fumes away from flames, for these fumes, toxic in themselves, become much more dangerous if decomposed by heat.

SOLVENTS USED HOT

For shop use, especially in the larger shops, it would be well to investigate the possibilities of some of the water-soluble solvents, used hot. These and other cleaning solvents and equipment were described in "Cleaning Parts Before Repairing," Chapter 62 in Volume J-4 of the book form of "Refrigeration Problems and Their Solution."

Commercial installations add up to nearly 50% of your market for room air conditioners

AND COMMERCIAL CONTRACTOR-DEALERS ARE THE KEY TO THESE INSTALLATIONS

Over the last nine years some 3,358,000 room air conditioners have been installed commercially throughout the U. S. by commercial contractor-dealers. This represents nearly 50 per cent of all room air conditioners sold, and in view of the vast untapped prospective commercial market this is only the beginning.

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Any way you add it up, AIR CONDITIONING & REFRIGERATION NEWS is your key to ever-increasing room air conditioner sales in an ever-expanding market—and at a surprisingly low cost to you. For a solid sales foundation tomorrow, advertise now in the NEWS! Do the first job where the first job is being done!

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The Newspaper of the Industry

The Newspaper That Carries More Advertising By Far Than Any Other Publication In The Field.

450 West Fort Street, Detroit 26, Michigan

NEW YORK, 521 Fifth Ave., MUrray Hill 2-1928-9, Robert M. Price.
CHICAGO, 134 S. LaSalle St., FRanklin 2-8093, Allen Schildhammer.
DETROIT, 450 West Fort St., WOodward 2-0924, J. B. Sullivan.
LOS ANGELES, 4710 Crenshaw Blvd., AXminster 2-9501, Justin Hannon.

CRMA Sees '58 Equaling '57--

(Concluded from Page 1, Col. 2)

group agreed, are the recent lowering of rediscount rates, giving promise of a reversal of the government's tight money policy, indications of a substantial pickup in housing construction, plus strong indications that many chain and independent food store operators plan to build or to remodel because of increasingly keener competition for the home-maker's grocery shopping dollar.

It was revealed, for example, that on the basis of a recent survey at least 1,700 new chain supermarket units have already been projected for next year. In addition, the group learned, a survey of independent food store operators shows that some 50% expect either to build or to remodel present facilities.

Brightest spot in the industry's 1957 performance, individual progress reports to the group revealed, is the comparatively better sales-building job done by manufacturers specializing in food service refrigeration equipment, a market that has shown a steady upsurge over the past two or three years. Every manufacturer in this category reported increases over 1956, by margins ranging from a few percentage points to as much as 11%, with reach-ins accounting for a major share of the total volume. However, some of the so-called "full line" manufacturers have made similarly good progress this year, their reports indicated, with individual gains of as much as 10% for the comparable 10-month period.

Discussion of the industry's profit record showed that the industry continues to suffer from the same malady of shrinking margins that is typical of American business generally, with earnings often failing to offset the increased costs of materials, labor, and overhead. The probability that the government will maintain its present high level of defense spending, or may even increase it in view of the missile program, precludes much hope of tax relief in the coming year, the members were reminded.

BUDGETARY CONTROL MAY BE ANSWER

In view of such indications, the group agreed, the ability of the individual manufacturer to maintain what may be an already too-modest rate of earnings depends largely on the extent to which he is able to apply proper management techniques. An effective budgetary control system, it was suggested, may very well prove to be the "right answer" to this problem, with special attention to overhead items.

NEW FREIGHT FORMULA EFFECTIVE JAN. 15

The members learned that as the result of a four-year project carried on by the CRMA Traffic Committee a new freight formula was recently approved by the railroads, which is scheduled to become effective Jan. 15, 1958. The measure will effect a number of economies that for the most part will be realized by the commercial refrigerator distributors and their customers, including a 7½% cut in the present cost of shipping display cases, in less-than-carload lots.

Another important concession is a drastic reduction in carload minimum weights from the present 18,000 to 20,000-lb. range to 12,000 lbs., applicable to all types of commercial refrigerators or mixed carloads. Permission has also been granted by the railroads to make uncrated carload shipments of all industry products, the committee's report stated.

A similar proposal is before the truck lines. The committee is composed of three experienced traffic directors, Leslie H. Fischer, Tyler Refrigeration Corp. chairman; William L. Brown, Hussmann Refrigerator Co.; and Norman E. Seidel, McCray Refrigerator Co.

At the meeting's conclusion, the association's president, Roger D. Jacobs, executive vice president of The Warren Co., who acted as chairman, announced that 1958 will mark the 25th anniversary of CRMA's founding. He said that one of the three meetings planned for next year will be designated to honor the occasion.

Jacobs also informed the group that the 1958 Plant Tour meeting, eighth in a series that feature a trip through a member's factory by engineering and production personnel from throughout the group, will take place in April, with McCray Refrigerator Co. as the host member.

Jurisdiction--

(Concluded from Page 1, Col. 2)

resorting to trickery and subterfuge to avoid settling the problem.

However, after the personal intercession of AFL-CIO President George Meany, it was announced that Gray had agreed to sit down with Walter Reuther, head of the AFL-CIO industrial department, and work out some sort of satisfactory compromise plan.

Gray said that if the problem was not settled by Feb. 28, he would call a meeting of the 19 to chart the next move. Just what they would do was not indicated.

Early last year, an air conditioning installation in the Mack Mfg. Co. plant at Plainfield, N. J. was delayed for more than a month when CIO maintenance workers in the plant refused to allow United Association (AFL) installers in the plant. The maintenance workers claimed the right to make the installation themselves.

After the Mack management demanded a decision, the AFL-CIO ruled that the UA mechanics employed by the installing dealer should do the work and they were permitted to do so.

PATENTS

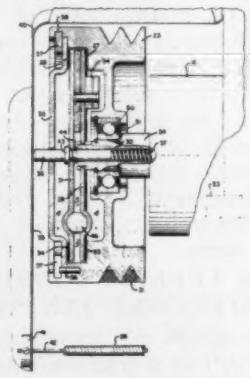
Week of Sept. 24 (Continued)

2,807,305. TUBE END FLARING HAND TOOL. Frederick M. Habermehl, Augusta, Ky., assignor of one-third to Bernie R. Gugel, Waverly, Ohio, and one-third to William L. Dooley, Belle, W. Va. Application May 23, 1955, Serial No. 510,207. 2 Claims. (Cl. 153—80.5.)

1. A tube expanding hand tool of the character described comprising a head, a fixed jaw member extending from one end of the head, a movable jaw member mounted on the fixed jaw member for lateral movement toward and away from said jaw member to respectively clamp and release the end portion of a tubular work piece, an elongated, intermediate handle fixed on the opposite end of the head, a first manual lever pivoted at one end on the movable jaw member and having a

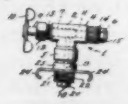
cam connection with the fixed jaw for actuating the movable jaw member, said first lever being coextensive with the handle and the head and swingable in the plane of the handle from an operative position adjacent one side of said handle to an inoperative position angularly spaced from said handle, a tube end forming die mounted for axial movement in the head in a direction normal to the movement of the movable jaw, a second manual lever pivotally mounted at one end on the head, and cam means operably connecting the said second lever to the die, said second lever being coextensive with the handle and swingable in the plane of the handle and the first lever from a position adjacent the opposite side of the handle, constituting its position at the end of the tube expanding stroke, to an initial position angularly spaced from said handle.

2,807,344. CLUTCH FOR REFRIGERATING APPARATUS. James W. Jacobs, Dayton, Ohio, assignor to General Motors Corp., Detroit.



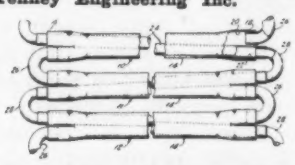
1. A clutch comprising: a driven shaft; a driving member mounted axially fixed and rotationally free on said driven shaft, said driving member having two inwardly directed drive surfaces; a clutch disk longitudinally movable on keyed to said driven shaft and engageable with one of said drive surfaces; a spring pressed pin longitudinally movable in said driven shaft.

2,807,391. VALVED DISPENSER. George T. Wrenn, Jr., Portsmouth, Va., assignor to Virginia Smelting Co., West Norfolk, Va.



1. In combination with a high pressure fluid container having one or more exposed and sealed ends, a dispenser assembly including: a fluid dispensing conduit having intake and exhaust extremities and an anchor member peripherally engaging a sealed end of the container interlocking the conduit and container, said conduit including gasket means seated within the intake extremity for sealing compression on a sealed end of the container and a rigid tubular cutter mounted in extension of the intake end of said conduit, said cutter being encompassed by said gasket proximate the exposed end of said cutter, and conduit reciprocating means joining conduit and anchor to progressively move the conduit against the container to effect complementary simultaneous cutting and sealing into the interior of the container in dispensing.

2,807,446. HEAT EXCHANGER. Bernard Friedman, Roseland, and Fernando E. Flores, Newark, N. J., assignors to Tenney Engineering Inc.



1. In a heat exchanger, upper and lower horizontally disposed outer tubes, each said tube having both of its ends pinched to form upper and lower openings, an inner tube diagonally disposed in the upper tube between the upper opening at one end of such tube and the lower opening at the other end, an oppositely diagonally disposed inner tube in the lower outer tube between the upper opening at one end of such tube and the lower opening at the other end and a connection between the lower end of the first-mentioned inner tube and the upper end of the second-mentioned inner tube.

(To Be Continued)

Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented.

Printed copies of patents, reissued patents, and patent designs may be secured from the Patent Office; patents and reissues are 25¢ each, while designs are furnished at 10¢ each. Address orders to: Commissioner of Patents, Washington 25, D. C.

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POSITIONS WANTED

SEEK POSITION as manufacturers service representative Attended and graduated Industrial Training Institute, Chicago. Eight years' experience commercial refrigeration, air conditioning, heat pumps, and complete line domestic appliances. Willing to take your specialized training. Age 31, married, make nice appearance, sociable. Will relocate. Have references. DOUGLAS A. MILCER, 207 Emmet, Ypsilanti, Michigan.

AIR CONDITIONING and refrigeration service engineer with some sales experience. Past eight years with a manufacturer of commercial and industrial equipment in a management capacity. Ten years' experience selling and servicing direct users. A. S. R. E. member. Reply to BOX A5922, Air Conditioning & Refrigeration News.

EXECUTIVE—ENGINEERING and/or manufacturing. Mechanical engineer with 23 years' experience in designing and manufacturing of heating, cooling, ventilation, air conditioning and refrigeration products and associated components. Familiar with all phases of manufacturing and production functions including processing, tooling, material and production control, procurement, personnel and accounting. 10 years of plant management experience in fast growing concerns. Prefer small or medium sized operation with potential and resources for expansion. BOX A5923, Air Conditioning & Refrigeration News.

REFRIGERATION SALES and service engineer with 7 years' experience in all phases of refrigeration, air conditioning, including automobile air conditioning. Desires position with manufacturers or distributors on West Coast. Age 25, married, 2 children. Have transportation. Will attend preliminary company school as required. Sales ability. BOX A5924, Air Conditioning & Refrigeration News.

SERVICE ENGINEER wants position as service representative with manufacturer or distributor. Thorough knowledge in servicing and installation of all makes and types of commercial and domestic refrigeration, air conditioning and electric motors. Can hold service meetings. Well experienced in sales. Prefer Missouri or Iowa. BOX A5925, Air Conditioning & Refrigeration News.

POSITIONS AVAILABLE

MOVE TO sunny Florida. Serviceman for Carrier dealer. Must be thoroughly experienced in installation and service on Carrier equipment. Applicant must have good back references and background. Year round employment. State qualifications in reply to PAYNES HEATING & AIR CONDITIONING COMPANY, 121 South Ingraham Avenue, Lakeland, Florida.

SALES ENGINEER: Excellent opportunity in expanding OEM sales department of well known manufacturer of control valves and devices. Engineering education desirable. Development or application experience in refrigeration, air conditioning, or heating essential. In reply state education, experience, earnings, personal data. Interviews arranged with qualified applicants. Replies held in confidence. BOX A5916, Air Conditioning & Refrigeration News.

AIR CONDITIONING and refrigeration sales engineer to represent leading wholesaler in selling very complete line of equipment, up to 100 tons, to the contractor. Complete knowledge of estimating air conditioning and refrigeration loads necessary. New York, Brooklyn, Long Island territory. Good salary, expenses, bonus. Write BOX A5926, Air Conditioning & Refrigeration News.

ENGINEERING LABORATORY Supervisor. Engineering education desirable. Experience to qualify for the position of supervisor of engineering laboratory for manufacturer of automatic refrigerant control devices. Interesting and challenging work in an expanding field. Employee benefits include hospitalization, insurance and retirement plan. Midwest location. Employees know of this opportunity. Reply in confidence giving details of education, experience, salary requirements, age and marital status. BOX A5927, Air Conditioning & Refrigeration News.

REFRIGERATION AND heating serviceman wanted: Must have ten years' experience in service and installation of commercial refrigeration and heating. Applicants should be qualified to supervise a complete installation. Year round work, paid vacations, other benefits. State qualifications, experience, age, etc., in letter. Well established firm in Middle West. BOX A5928, Air Conditioning & Refrigeration News.

SERVICE SALES engineer. Need man with well rounded field service experience, who is alert, capable, enthusiastic. Must have knowledge of application of heating and air conditioning to qualify as salesman to sell replacement equipment for existing jobs and also sell service contracts. This is an important job opening with well established company. BOX A5929, Air Conditioning & Refrigeration News.

PRODUCTION DESIGNER. Mechanical engineering graduate with several years' experience in design. Must be capable of executing the mechanical design and supervising the detail drawing of commercial cooling units involving sheet metal cabinets, coils, fans, etc. Heat transfer background desirable but not essential. Location: New England. BOX A5930, Air Conditioning & Refrigeration News.

EQUIPMENT WANTED

WANTED: MANUFACTURERS surplus, outdated or obsolete refrigeration items—expansion & water & shutoff valves, controls, relays, dehydrators, units, tubing, fittings, etc. All sales on a cash close-out basis, large or small quantity. Write or call: COMMERCIAL CONTROLS CO., 257 East 3rd Street, New York 9, N. Y., ORegon 3-7210.

EQUIPMENT FOR SALE

CENTRAL HOME air conditioners: 1½ H.P.—$165.00 F.O.B. York, Pennsylvania. Self contained, air cooled condenser, completely assembled and wired. Cooling capacity—15,750 B.T.U. per hour. New in original crates. Quantities limited. Write or phone today. Wm. A. Hewett, YORK-SHIPLEY, INC., York, Pennsylvania, Phone: 7871.

MISCELLANEOUS

ATTENTION SERVICEMEN: Send for free circulars and bulletins on refrigeration parts and equipment. Real money saving values: WALTER W. STARR, 2833 Lincoln Avenue, Chicago 13, Illinois.

JOB SIGNS for air conditioning and refrigeration installation companies: Parrafine coated (weatherproof) cardboard size 20"X14" in two colors. Large type used, fine layouts. Your signs displayed on your job builds prestige and invites inquiries. Price 100, $36.00, or 250 for $50.00 F.O.B. Indiana. Send for sample or send order. Enclose copy on letterhead. HOWARD WOLLER AND CO., 101 Ellwood Avenue, Mt. Vernon, New York.

For more information about products advertised on this page use Information Center, page 16.

Servicing Automobile Air Conditioners

(Vol. 2)

BY C. DALE MERICLE

The Polar-Temp unit is the eleventh make to be discussed in the current series on automobile air conditioners. Makes previously described in this series were A.R.A., Artic-Kar, Frigette, Frigikar, Kauffman, Mark IV, Airtemp, Mobilette, Novi, and Vornado.

Models discussed in the current series are 1956 and/or 1957. For data on earlier models readers are referred to the original series of articles, which is available now in the handy manual, *Servicing Automobile Air Conditioners.*

Polar-Temp (1)

Air Controls Corp.
400 Stonestreet Ave.
Rockville, Md.

"Polar-Temp" automobile air conditioner is of the under-dash type design. Evaporator-blower case is attached beneath the dash of the car (Fig. 1), condenser is located in front of the radiator, and the compressor is mounted on the engine and belt-driven off the crankshaft.

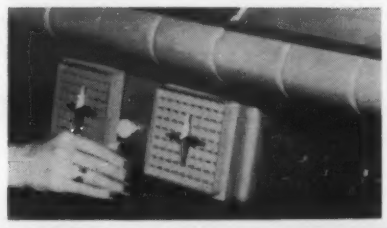


FIG. 1—Polar-Temp under-dash unit has adjustable thermostat for controlling solenoid by-pass valve or magnetic clutch.

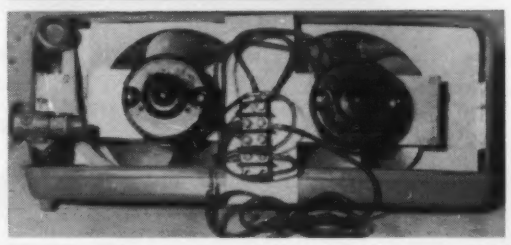


FIG. 2—Rear view of Polar-Temp unit. Note two fans and terminal block.

Two propeller-type fans are mounted on the back of the evaporator case (Fig. 2), which is made of plastic.

Standard Polar-Temp unit employs a solenoid by-pass system which is controlled through an adjustable thermostat. Deluxe model has a thermostatically controlled magnetic clutch in place of the by-pass hookup.

Refrigerant-12 is standard in Polar-Temp units. Full charge is 2½ lbs.

Compressor

A choice of compressors is offered with Polar-Temp units, so on some the serviceman will find the Tecumseh HH compressor; on others, the Lehigh V-93 machine.

Suction service valve of the Lehigh V-93 unit is on top between the cylinder heads; discharge service valve is on back opposite the flywheel end.

Service valves may be found on the sides or back of the Tecumseh HH compressor. Suction service valve is usually on the left side and discharge service valve on the right side, as viewed from the flywheel end. When either or both of these valves are mounted on the back of the compressor, they're located in the same corresponding left and right positions.

A magnetic clutch is provided on Polar-Temp Deluxe models.

Condenser

A two-row condenser is used on Polar-Temp systems. It is installed in front of the car radiator. Inlet and outlet connections are usually on the right (curb) side.

A combination receiver and drier is mounted at the condenser outlet.

Sight class is attached to the base of the receiver-drier.

Evaporator

Polar-Temp evaporator assembly, which attaches beneath the dash of the car, includes the evaporator coil, expansion valve, fans, and controls.

Two six-blade fans are employed on this unit, the fan motors being wired in parallel so that both are controlled from a single switch. Four air outlets are provided on the unit, the two outlets on the front of the unit being rectangular plastic grilles whose position can be adjusted to direct air flow as desired.

Controls

Temperature and fan controls are mounted on the front of the evaporator case between the two adjustable air outlet grilles (Fig. 1).

Fan control is a rheostat which regulates the speed of the two fan motors as well as permitting them to be turned off. At maximum speed, the unit is claimed to deliver approximately 500 c.f.m.

Standard Polar-Temp units, which use a solenoid by-pass valve, have a thermostat mounted on the front of the evaporator case which controls the opening and closing of the solenoid valve. Setting of the thermostat can be readily changed by the occupant of the car to regulate the amount of cooling effect. Lowest setting of the thermostat, however, should be sufficiently high to prevent icing of the coil.

Deluxe Polar-Temp units, which use a magnetic clutch instead of the by-pass arrangement, also have an adjustable thermostat on the evaporator case. The thermostat cuts the magnetic clutch in and out to maintain the temperature setting of the thermostat. The thermostat also has an "off" position to disengage the clutch when no cooling is desired.

(To Be Continued)

Alfred C. Buensod, Pioneer In Air Conditioning, Dies

SCARSDALE, N. Y.—Alfred C. Buensod, 71, a pioneer in air conditioning who was chairman of the board of Buensod-Stacey, Inc., engineering contractor of New York City, died Nov. 25 at his home here. Buensod had been in ill health for a year.

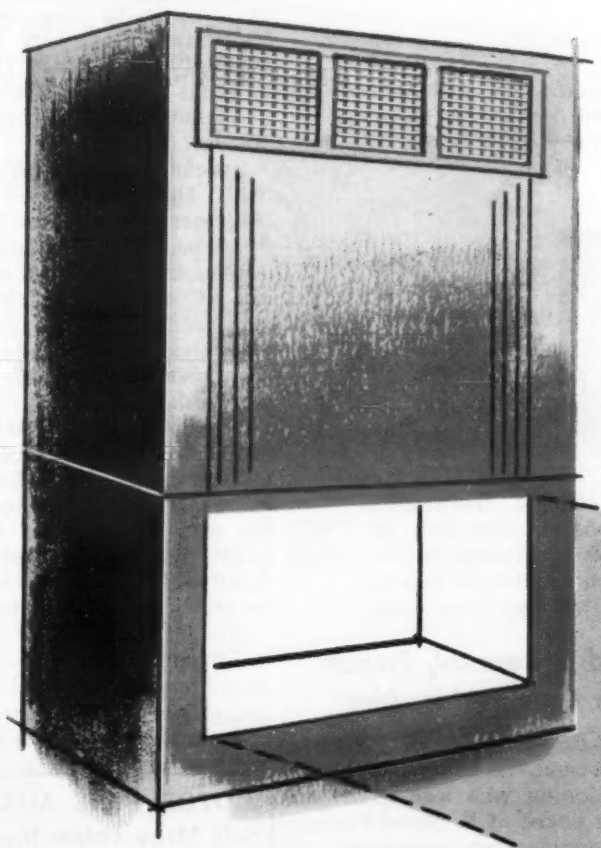
Buensod is survived by his wife, Irene; a daughter, Susan Jewel; a sister, Mrs. George Watson, St. Petersburg, Fla.; and a nephew, Henry Watson of Saudi-Arabia.

Born in New York City on Oct. 8, 1886, the son of Mr. and Mrs. Henry S. Buensod, Mr. Buensod was graduated from Stevens Institute of Technology in 1907 with the degree of Mechanical Engineer. Upon his graduation he joined the International Cigar Machinery Corp., a subsidiary of American Machine & Foundry Co.

Specializing in the tobacco field, Buensod joined Carrier Engineering Corp. in 1915. He developed air conditioning methods for the curing and conditioning of tobacco which greatly increased the efficiency of tobacco processing and made substantial savings in waste of raw material.

In 1935 Buensod left Carrier to form Buensod-Stacey Air Conditioning Co., Inc., now known as Buensod-Stacey, Inc. He was president of the company from its formation until April, 1956 when he resigned to become chairman of the board.

During the period 1935-1957 he continued his research and development in the tobacco field and a number of air conditioning patents were issued in his name.



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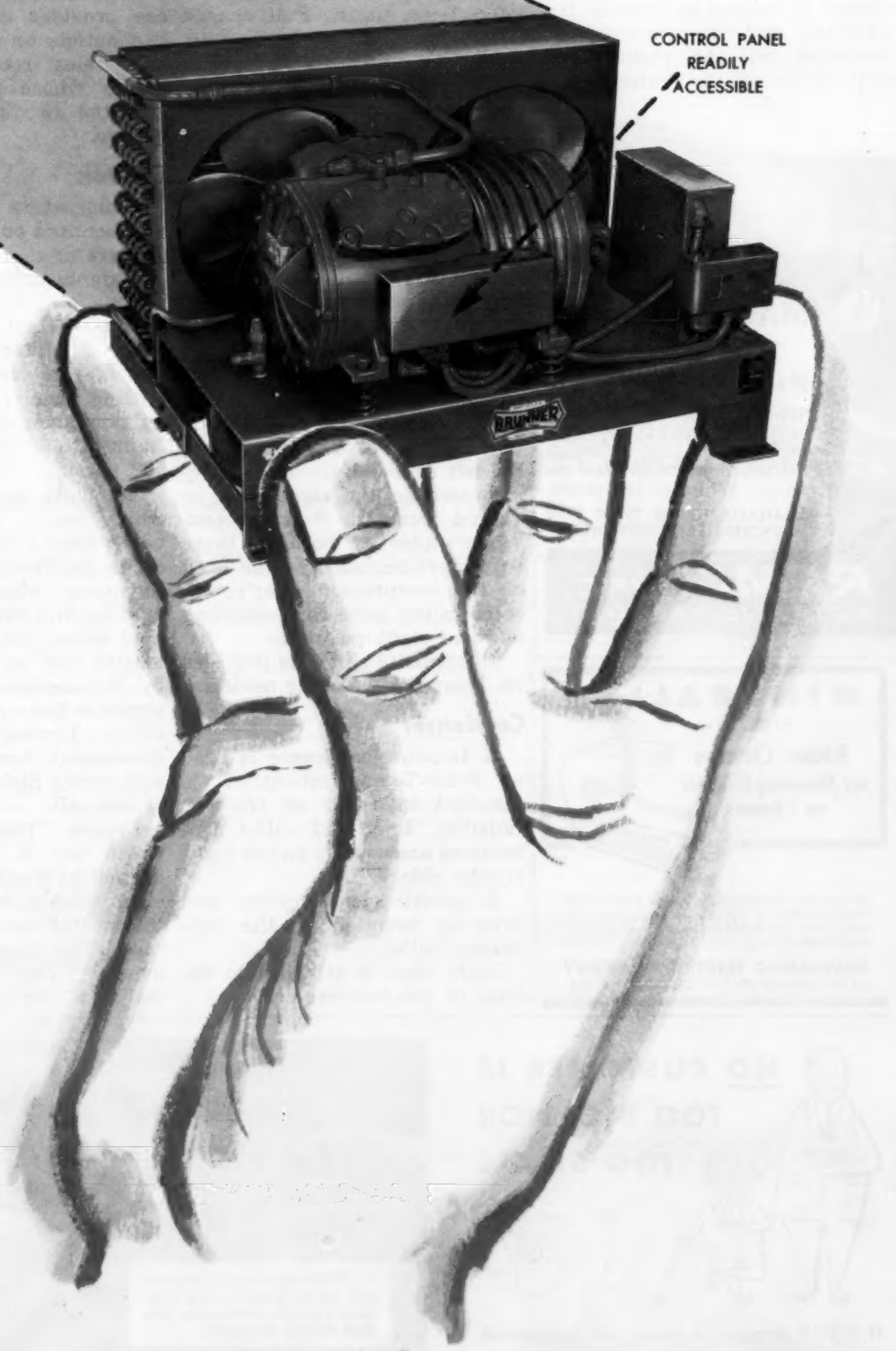

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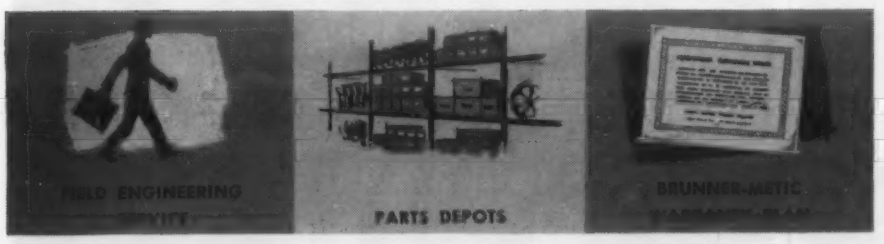

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